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INSURANCE GUIDE AND HAND BOOK.

THE

INSURANCE GUIDE

AND

HAND BOOK:

[DEDICATED ESPECIALLY TO INSURANCE AGENTS.]

BEING

A GUIDE TO THE PRINCIPLES AND PRACTICE OF LIFE ASSURANCE;

AND

A HAND-BOOK OF THE BEST AUTHORITIES ON THE SCIENCE.

WITH A HISTORY OF THE INTRODUCTION OF THE VARIOUS BRANCHES OF INSURANCE NOW
PRACTISED;—A POPULAR OUTLINE OF THE LAWS OF MORTALITY;—OF THE CON-
STRUCTION OF MORTALITY TABLES;—THE FORMATION OF RATES OF PREMIUM,
WITH THE RATES OF ALL THE OFFICES;—THE DERIVATION AND DIVISION
OF BONUSES;—THE OPERATIONS OF INTEREST, SIMPLE AND
COMPOUND;—THE SURRENDER VALUE OF POLICIES;—
AND OTHER POINTS OF PRACTICE.

Together with a Chapter on

LIFE ASSURANCE AS AN INVESTMENT.

BY

CORNELIUS WALFORD,

BARRISTER-AT-LAW, FELLOW OF THE STATISTICAL SOCIETY OF GREAT BRITAIN, ETC., ETC.

Second Edition.

LONDON:
CHARLES AND EDWIN LAYTON,
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PREFACE TO SECOND EDITION.

The first edition of some thousands has long been out of print, and requests for a second edition have reached me from all parts of the world. Numerous engagements have prevented an earlier response to those requests.

In preparing this edition I have kept as nearly as possible to the former text. At the same time, the Tables and everything that was necessary to be revised has been revised, down to a very recent date. Thus, all the numerous office changes during the last eight years—the births, marriages, and deaths of the Insurance Offices—will be found duly recorded. The results of Dr. Farr's English Life Table, No. 3, will be found in their proper place. The chapters on Population, etc., in Division II. have not been revised on the last census returns. For the purposes of this work the results of the former census are sufficient.

My present publishers have been as indulgent to me as my former publisher—they have, at considerable pecuniary sacrifice, abstained from seeking advertisements from the Insurance Offices, and from every other step that could in the smallest degree detract from the independent character of the book. It went its own way without fear or favour in its early youth; I desire it to do so now.

I owe considerable obligations to the following gentlemen:—Mr. J. Westby Gibson, for a most painstaking revision of the technical errors which were almost incident to a first edition; to Mr. J. A. Cook, for a careful revision of the Tables relating to Office Changes; and to Mr. Edwin Justican, for the revision of Tables of Rates, and the Bonus and Share Tables.

I shall be indebted for any suggestions or corrections which may occur to the reader.

THE AUTHOR.

Little Park, Enfield,
London, *4th July*, 1867.

PREFACE TO FIRST EDITION.

It is announced, somewhat prominently, on the title-page, that this work is especially dedicated to Insurance Agents;—and this object has been kept steadily in view in its production. Although the reputation of an Insurance Company is chiefly derivable from the position in society and personal character of the gentlemen who form the Board of Directors,—and its success in a great measure dependent upon the talent and zeal of the officers to whom the management of its affairs is entrusted,—it must be admitted that a considerable portion of the business of an Office is obtained through the instrumentality of intelligent and persevering Agents. A skilful Manager will have no difficulty in conveying to an Agent, who is, for the first time, entering upon that capacity, such general intructions respecting the nature of the duties he is about to undertake, as will enable him to set about his work with satisfaction to the Company, and with advantage to himself. But there is, still, a large amount of information, connected with the principles and practice of Life Assurance, most desirable for the Agent to be acquainted with, which a Manager, or an Inspector of Agencies, cannot be expected to find leisure to furnish or discuss. Such information it is the primary object of this work to supply. That the desire for more extended knowledge on the subject exists very generally among that body, I have long had the means of knowing.

While showing the theory of Life Assurance to have an essentially scientific basis, I have yet endeavoured to furnish a practical illustration that the whole subject is capable of popular treatment;—and that it requires no greater application than is ordinarily bestowed on business subjects, to become perfectly familiar with a branch of knowledge generally looked upon as involved in hopeless mystery.

I have sought to make this work not simply a GUIDE to the *principles of Assurance*, but also a HANDBOOK on all essential *points of practice.* With this view I have been careful, and not sparing of pains, to fence my opinions and conclusions with the testimony and support of the best writers on the several points under discussion:—hence the names of De Morgan, Babbage, Price, Milne, W. Morgan, Brown, Hendriks, Dr. Farr, and others well known in the Insurance world are of constant recurrence in the following pages.

Throughout the work I have drawn no invidious distinction between OLD and NEW Offices, or between ancient and modern principles and practice. Some real improvements have been introduced by the younger Offices;—although these are not nearly so numerous as many have been led to believe. The chief advantage of modern competition has been to infuse into the older Offices a greater spirit of liberality; and this has already rendered, and will continue to render, the practice of Life Assurance more profitable than formerly.

During the last few years something little short of an "Insurance mania" has prevailed. This is being followed by a reaction—as is shown by the continuous records of windings-up, dissolutions, and amalgamations to be found in the columns of the POST MAGAZINE. Pending the next outbreak, which may not occur for another century—the first was a century ago—and premising that the long-talked-of legislation (when it comes) will be productive of neither good nor harm, the business of Life Assurance, it may be expected, will be carried on in its legitimate form:—viz., through respectable and well-informed Agents, representing sound and well-constituted Companies. To these, if to any, my book will be found of real service; and to them accordingly I commend it.

THE AUTHOR.

London, September, 1857.

THE
INSURANCE GUIDE AND HAND-BOOK.

DIVISION I.

PROGRESS OF LIFE AND OTHER ASSURANCES.

CHAPTER I.

GENERAL REVIEW.

> "It would be an interesting and instructive exercise to trace minutely the origin and progress of Life Assurance in this country. To do so thoroughly it would be necessary to take notice of the advances made at different times and places in collecting the facts regarding human life and mortality: which, while they form the basis of Life Assurance, have, at the same time, other important uses. It would be requisite also to show the progress made by successive writers in the development of the Science of Probabilities, as deduced from these data; and, finally, to mark the growth of Life Assurance as a scheme of business gradually gaining acceptance with the community, and now covering the land with prosperous institutions, which are yearly dispensing their benefits among innumerable families."—*North British Review.*

IF we are to believe the records which have been handed down to us, the progress of the Insurance principle in this Kingdom has not been without its romance. Persons, who, for the first time, direct their attention to the practice of modern Assurance, affect to be startled at the expansive character it has assumed. They discover that not only may they insure their ships against the fury of the waves—their houses and property against the dire calamity of FIRE—or, (still more important,) make suitable provision for those dependent upon them in the event of their untimely removal by *death*—but that they may secure compensation in the event of loss of sight—for broken limbs by railway mis-management—for broken heads by midnight bandits—the casualties of the chase—or the frightful risks of the battle-field. They may insure their crops against the devastation of hail-storms—their plate-glass against the carelessness of servants, or damage by evil-disposed persons,—their cows and horses against the ravages of disease,—their ledgers against bad debts. Race-horses may be assured against the *in*fidelity of their grooms—and clerks may have *their fidelity* guaranteed. Property-holders may have their titles secured, and sleep without fear of ejectment,—Copyholds and Leaseholds may be made equal to Freeholds,—School and College *Endowments* may be provided. All this, and much more, is done by modern Assurance!

But if the applications of modern Assurance are so multiform, what will our readers say to the earlier Insurance schemes, when they come to learn more of them? We should simply subject ourselves to the charge of romancing if we were, thus early, to rend aside the veil of a century, and assert the existence of Companies for Insuring against Housebreakers and Highwaymen,—*against lying*, or death by *drinking Geneva!* Yet the climax of that period—(the era of the South Sea bubble)—was only reached by a scheme in 'Change-alley for the insurance of *female chastity*, and another against *Divorces!** A little later these outrages degenerated into "little goes," and "Insurance Wagers." *Then*, as a popular writer has observed, any public event would do for a venture. Wilkes in the Tower,—Lord North in disgrace with the people, were scheduled in broker's books as good subjects. Successes or disasters in war,—the seals of a Prime Minister, or the life of a highwayman,—all served the purpose of the policy-mongers, if by them they "put money in their purse". Large sums were paid by the Underwriters at Lloyd's, who speculated upon the failure of a young fellow who had undertaken, for a wager, to go to Lapland, and bring back within a given time two *rein-deer*, and two *Lapland females*—and did it! But we will not further anticipate the course of events.

The various systems of Insurance and Assurance,† as now practised, are mostly of modern adaptation; and although some of them have arrived at a great point of development, the progress has been slow, and sometimes involved in mystery. This progress we now desire to trace; believing that a knowledge of the circumstances which have led to improvements in the past, may lead to still further improvements in the future; and also believing that those who are now intimately associated with the practice—either as *agents*, or in higher, if not more useful, capacities—will not feel the less interested in their labours by a larger acquaintance with the struggles and triumphs which have ensued, from the period of the first glimmerings of the theory (where we can trace them) down to its complete recognition as a science—or even until *now*, when its practice is working a financial change in the wealth and commercial relations of this country; and a great social change in the habits and comforts of the people. By these means we shall seek to unite the past with the present, and to imply the probabilities of the future.

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* Hone, in his famous *Every-day Book*, gives, *inter alia*, the following list of Companies established in the period we are speaking of:—For breeding and feeding cattle; —for making paste-board;—for a grand dispensary;—a royal fishery, and a fish pool; —for making glass bottles;—for discovering gold-mines;—for *an assurance against thieves;*—for dealing in hops;—for a flying-machine;—for *insuring of horses;* for feeding hogs;—for curing the gout and stone;—for an air-pump for the brain;—for *insurance against divorces;*—for making butter from beech-trees;—for a perpetual motion;—for making deal-boards of sawdust.

† A useful, if not always practicable, distinction between the two has been set up. "*Assurance* is a contract dependent on the duration of life, which must either happen or fail. *Insurance* is a contract relating to any other uncertain event which may *partly* happen or *partly* fail: thus, in adjusting the price for Insurance of houses and ships, regard is always had to the chance of salvage arising from partial destruction."—*Babbage.*

That we may not be able to say much that is *new*, on a subject which has been so thoroughly canvassed, we are prepared to admit; but if we shall succeed in making understandable and popular to the reader, much that is now locked up in the libraries of the learned—in rescuing from a deluge of mathematical formulæ or scientific mystification (totally incomprehensible to the great majority of those by whom the *real work* of Assurance and Insurance is carried on), those gems from the "great masters" which have raised the science to what it now is—those principles which no longer need algebraical demonstration—we shall consider we have lent service to the cause we have espoused—different in kind, truly, but no less important for practical purposes—than if we had written one of the most learned treatises the world has ever welcomed, though failed to understand!

FIRST INDICATIONS.

Without encumbering our subject with lengthened researches into Ancient History, or attempting to prove or disprove that Greece and Rome, in addition to the many good and noble institutions they possessed, are also entitled to the credit which has been claimed for them, of having laid the foundation of the great principles of Insurance, we purpose to take a slight historical glance at the progressive development of those principles in this kingdom, or elsewhere, as our subject may lead us. It is more than probable that our own good King Alfred, amongst the many wise laws and institutions he originated for his subjects, laid down the first principles of mutual association and combination for good purposes. At all events it is quite clear "that associations founded on mutual principles, in which union for good or for ill, and in which provision was made for contingences, were the prominent features, are to be found in our Saxon annals." This is the dictum of Mr. Francis,[*] who has been at some pains to investigate the subject. He continues, "the axiom that 'union is strength,' the necessity of providing for casualties by Mutual Assurance, in other words, Assurance on its broadest and most rational basis, was practised in the Saxon Guild, the origin of which was very simple. Every freeman of fourteen being bound to find sureties to keep the peace, certain neighbours composed of ten families became bound for one another, either to produce any one of the number who should offend against the Norman law, or to make pecuniary satisfaction for the offence. To do this they raised a fund by mutual payments, which they placed in one common stock. This was pure Mutual Assurance. From this arose other fraternities." Of the nature of these other fraternities we may give one or two examples. Here is one of the rules of the St. Catherine's Guild:—"If a member suffer from fire, water, robbery, or other calamity, the Guild is to lend him a sum of money without interest." By the regulations of a similar

[*] Francis' *Annals, &c., of Life Assurance*, 1853. Whatever may be thought of Mr. Francis' book, taken as a whole—and it has been very severely criticised—it certainly presents amongst a great deal of romance some useful information regarding the development of the Science of Life Contingencies in this country, and such as we have not met with in more learned performances. As a *History of the Science of Life Contingencies* its claims are but very slender.

society at Exeter. "When any member is about to go abroad, each of his fellow-members shall contribute five-pence; and if any member's house is burnt, one penny." These rules read as fresh as if they were only just certified by the hand of our immortal Tidd Pratt. Here is one of another kind taken from a Cambridge society of Saxon date:—"If any one shall take away the life of a member his reparatory fine shall not exceed *eight pounds;* but if he obstinately refuse to make reparation, then shall he be prosecuted by and at the expense of the whole society; and if any individual undertake the prosecution, then each of the rest shall bear an equal share of expenses. If, however, a member who is poor kill any one, and compensation must be made, then if the deceased was worth 1,200 shillings, each member shall contribute half a mark [equal in weight to about £2 1s. 3d. of our silver coinage]; but if the deceased was a hind, each member shall contribute two oræ [equal to 10s. 4d. present coinage];—if a *Welchman* ONLY ONE!"

It is known that after the conquest, Guilds were established for the express promotion of religion, charity, or trade; "and from these fraternities" (says a modern writer) "the various Companies and City Corporations have arisen." In none of these early societies, however, do we observe any risks undertaken other than those against such casualties as could be taken easy note of. The doctrine of probabilities, as applying to the higher class of risks, had still to be developed. We fully agree, however, with Mr. Hendriks (the talented Actuary of the *Globe* Insurance Company) that "the non-existence in ancient times of the theory of probabilities as a science, or as anything beyond a philosophical idea of the weight of testimony, cannot be accepted as a reason for the unlikehood of the early practice of Insurance."

MARINE INSURANCE.

It is now admitted by all writers that Maritime casualties were the first to which the principles of Insurance (as distinguished from the friendly contributions before referred to) were applied. So far back as the year 1435 the magistrates of Barcelona issued an Ordinance relating to this class of Insurance, which we have good authority for stating "should be reputed as the first instrument of legislation known up to that period in Europe." Mr. Lewis Pocock, in his interesting book on Life Assurance, says—"The proportionate hazard of different voyages which constituted the essential quality of Marine Insurances appears, however, to have been understood so early *that something approaching to the principle* seems to have been employed in the later ages of Rome, by which vessels lost at sea or taken by the enemy were to be replaced, in return for supplies furnished to the army in Spain. This agreement of indemnification," he continues, "may be considered an Assurance, *though defective in the modern condition of a premium.*" But a no less legal authority that the late Mr. Baron Parke held that this bore "no resemblance to the contract of Insurance, for it is (he says) nothing more than every well regulated State is bound to do by the ties of natural justice." And he adds, "it is equitable and right that those who in times of public danger appropriate their private wealth to the advancement of the public service, should be reimbursed from the purse of the State for the losses they may sustain." We will not add to the number of writers who have already entered the ranks of controversy on this question, but will take the award of Mr. Hendriks (after he had fully investigated the claims on both sides) as just and equitable between them, viz., that the contract of nautical interest, or loan on bottomry, or respondentia,* was used from very remote ages by the Greeks, Romans, and other nations, as their ordinary Insurance contract, which end it perfectly answered; and that eventually *it formed the traditionary groundwork on which arose the superstructure of the Insurance system of modern Europe.* And this is the point we seek to arrive at.

In the 16th century the principle of Marine Insurance is known to have existed in Italy, the Netherlands, and *Britain.* The earliest mention of it occurs in 1548, in a letter written by Protector Somerset to his brother the Lord Admiral. That it was commonly understood in 1558 may be gathered from the speech of Lord Keeper Bacon, on opening Queen Elizabeth's first parliament, wherein he said, "doth not the wise merchant in every adventure of danger, give part to have the rest assured?" In the 17th century the Lombards, who had settled in this country a century or two previously, greatly distinguished themselves in this branch of business; and Marine policies issued at Antwerp, so early as 1620, were expressed to be made "according to the custom of the Lombards, in Lombard Street, London."†

The first English statute relating to Marine Insurance was passed in 1601. It is entitled "An acte concerninge matters of Assurances amongste merchantes," and its preamble furnishes some information strictly to our present purpose:

> "Whereas it ever hathe bene the policie of this realme by all good means to comforte and encourage the merchante, therebie to advance and increase the generall wealth of the realme, her Majestie's customes, and the strength of shippinge which consideration is nowe the more requisite because trade and traffique is not at this present soe open as at other tymes it hath bene. And whereas it hathe bene *tyme out of mynde* an usage amongste merchantes, bothe of this realme and of forraine nacyons, when they make any greate adventure (speciallie into remote partes) to give some consideracion of money to other persons (which commonlie are in no small number) to have from them assurance made of their goodes, merchandizes, ships, and things adventured, or some parts thereof, *at such rates*, and in such sorte as the parties assurers and the parties assured can agree, which course of dealinge is commonlie termed a *policie of assurance*; by means of which policie if it cometh to passe, upon the losse or perishinge of any shippe, there followethe not the undoinge of any man, but the losse lightethe rather easilie upon many, than heavilie upon fewe, and rather upon them that adventure not, than those that do adventure; whereby all merchantes, speciallie the younger sorte, are allured so venture more willinglie and more freelie."

It then enacts certain regulations to be observed for the advantage of both assurers and assured.

It has been asserted, with some show of authority, that we are indebted to the JEWS for the origin of Marine Insurance. The French writers especially have taken this view. They fix the date of the invention 1182, when the Jews were banished from France, and "took that mode to facilitate and secure the removal of their effects." The Lombards, these writers assert, "were not idle spectators of this contrivance." They adopted it, and as we have already stated, "in a short time improved it considerably." We quote from Mr. Baron Parke. The authorities he consulted affirmed that the Jews, upon this occasion, invented *Bills of Exchange*, but he found none which credited them with having originated policies of Insurance.[*]

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* These terms are hereafter more fully explained.

† G. D. B. Beaumont on the Law of Insurance.

The first attempt to organize a corporation for the purposes of this branch of Insurance, of which we have any record, was made in Holland, under the sanction and support of governmental authority, and dates no further back than the commencement of the 17th century. In 1629 the States General presented to the deputies of the various provinces the plan of a *general chamber or Company of Insurance*, urging that "they were persuaded that this Company or General Chamber of Insurance, once put into train, the merchants could carry on a much securer trade by sea than heretofore; and that besides, it would afford a means of releasing the provinces from the large extraordinary subsidies which the latter declared they could no longer continue." The plan was to be made compulsory under pains and penalties of the severest nature. It provided specific rates of premium for voyages to and from the chief foreign ports. The Proprietors and Directors were to be responsible to the extent of their subscribed shares. The States General were to subscribe four millions of florins, two-thirds on account of their share in the risks of profit and loss, the remaining third being ceded as a gift to the Company; and it was intended to make it a trading as well as an Insurance Company, giving it a monopoly of the Dutch trade in the Levant. The merchants to whom the matter was referred "unanimously determined that such a Company would be *disadvantageous to the general commerce of those provinces, and burdensome to those branches of trade in particular, and to that which is more especially devoted to the fitting out and freighting of ships.*"[†] And so the matter ended for a time.

The following passage from Leybourn's *Panarithmologia*, published in 1693, explains quaintly enough the practice of *Marine* Insurance at that period, and the value in which it was held. "Assurance (he says) is when you are in any manner of fear of the ship your goods are in, or the danger of the voyage, or of pirates, &c. You then are willing to give another man a certain sum of money to put himself in your place, and if any danger arises, to pay you for the same goods the value that you have assured. It is a thing that hath been long in custom and use amongst traders, and was established by a law under *Claudius Cæsar*, before the birth of CHRIST; *it hath been much practised in all trading nations, and is a cause of great increase of trade*, because that hazard is borne by four or five[‡] with mutual consent, which otherwise must fall upon one person. The nature of it is thus: Suppose you ship £300 of goods for Jamaica, you being unwilling to run so great a hazard yourself; you go to the Assurance Office *behind the Royal Exchange, in London*, and there acquaint the clerk you will *ensure* for £200, or £250, or if you will, the whole £300, (for you may ensure the whole or any part) upon such a ship, for so much goods as you have on board."

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[*] *Vide* Assurance Magazine, Vol. II., p. 145.

[†] *Vide* Mr. Hendriks' excellent papers in 4th Vol. of Assurance Magazine.

[‡] In Marine Insurance sometimes four or five persons called "underwriters" take the risks upon themselves,sometimes only one,butat other times 20 or 80.

But in those days, as now, dishonest practices had crept in, and had to be guarded against by those who granted insurances, while those who insured had to see that they committed their risks to honest and trustworthy persons: hence these additional observations were made by the same writer:—"Those assurances are most dangerous when they have the words inserted, lost or not lost, which is commonly done when a ship hath been long missing, and no tidings can be had; the *premiums* (especially in time of war) will run very high, sometimes 30 or 40 per cent., and although it happens at the time that the subscription is made, the ship is cast away, yet the assurers must answer the loss to the insured. *But if the party that caused the insurance to be made saw the ship wrecked, or had certain intelligence*, such subscription *will not oblige the same, being accounted mere fraud.* So, likewise, if the assured, *having a rotten vessel, shall assure upon the same more than she is worth, and afterwards give orders, that, going out of port she should be sunk or wrecked, this will be fraudulent and not oblige the assurers to answer.* So soon as you hear of a certain that a loss has happened, you must inquire at the office for the insurers (if you know them not) and acquaint them of the loss, and how you came to know it, and desire them to inform themselves of the truth of it if they please, and are not satisfied with your report. When they are satisfied there is a real loss, there is generally an abatement of 10 *per cent.* for prompt payment; for if they are punctual men, and value their reputations, they will presently pay you; if not they will shuffle you off, and endeavour to find out flaws, and raise scruples for a larger abatement than ordinary, and sometimes will keep you a year or two out of your money, and many times never pay; *but generally get in case of loss* 15 *or* 20 *per cent.* abated; I have known 40 per cent. abated on very small pretensions which makes a common proverb about such insurers:—*What is it worth to insure the assurers?* Be careful, therefore, to deal with honest men that value their reputation, when you have anything to be insured!" This advice of the seventeenth century stands in equal force and virtue in the nineteenth.

In 1720 a Parliamentary Committee sat to inquire into the practice of Marine Insurance as then existing; complaint having been made to the Government that "several unjustifiable projects and undertakings, whereby great mischief might accrue to the public," were being entered upon. The various petitions, counter-petitions, and affidavits presented to, and examined by, this Committee, furnish valuable evidence of the position of this class of business at the commencement of the last century. It may be noted that this was the first Parliamentary Committee on Insurance matters in this country.

The first petition examined was dated 25th January, 1719, and bore the signature of 286 merchants and traders, headed by Sir Justus Beck, of Leadenhall Street, praying for the establishment of an Incorporated Company of Insurers with a Joint Stock, and its argument avers that such a company would preserve many of his Majesty's "good subjects and their families" from that ruin to which they were exposed by being assurers in a private capacity. A counter-petition was got up by the underwriters, who were naturally alarmed at this step, signed by 375 persons, headed by Sir Gilbert Heathcote; the gist of this objection being that the establishment of a corporation would lead to undue preference, and to delay and refusal to insure when ships might be missing and in stormy weather. The British merchants also came forward with an adverse petition, urging that insurance business was in a satisfactory condition, the premiums charged in London and Bristol being lower at that time than in any other part of Europe. It was also stated that the scheme was originated simply for the purposes of stock-jobbing; and that as many families were supported by the then existing system, there was "no reason to destroy them without absolute necessity."

It was alleged by the supporters of the petition that there were *great losses by private insurers:* so much so that it had become customary (as hinted by the author just quoted) in many cases to *insure the insurers:* a precaution not unnecessary it would seem, for we have it on the authority of Adam Smith, that a list was laid before the Attorney-General of *one hundred and fifty private insurers who had failed in the course of a few years just previously to this period!*[*] And it was further stated that previously to that time many English merchants had insured at Hamburgh for greater safety! Further still, one Robert Fletcher, a merchant, made solemn affidavit and said, "that being lately in Holland, and frequently in conversation with several merchants there, and often discoursing of a subscription then going on in London towards a fund for insuring ships and merchandise, they very much approved of the project, believing that if completed it would be a better security for the insured than any method in practice at the time."

But all this was of no avail. The attorney and solicitor-general, to whom the petitions were ultimately referred, reported to the King after the following fashion:—"That the business of Insuring ships *had always been carried on as it then was; that there was no Corporation in Europe for Insuring ships;* and that the making an experiment in a thing of the sort, if it should prove amiss would be of the utmost consequence to trade. Finally, that they could not advise the erection of a Corporation *against which there were so many and great objections:* and especially the method then used being approved of both at home and abroad!"[†]

On what grounds the statement of the approval "at home" was based, we know not. We find a merchant writing soon after this period, "that the making of Insurance" had "vastly increased; for gamesters" he continues "wagerers, and cunning fellows, who pretend to deal in speculation, began to be almost as much concerned as the merchants; so that a policy of insurance in a short time acquired *rather the effect of a box of dice, than a contract to secure trade;* and as gamesters seldom play fair after a few of the first games, it was not long before foul play in assurances began to appear, and which has ever since continued increasing, insomuch that it is now almost as common to hear of a wilful and fraudulent, as of an inevitable, loss at sea." It is also worthy of notice, as indicative of the period, that on the matter of these petitions being introduced in the House of Commons soon afterwards, Sir William Thompson entered into long explanations how "one Bradly" and "one Billingsley had endeavoured to bribe him and Sir Edward Northey, not only in this but also in another undertaking called 'The Lord Onslow's Insurance.'"* Messrs. Bradly and Billingsley were the agents employed for obtaining the charters for these projects. Several years previously (1716) these *learned* gentlemen had concocted a scheme for a "public Assurance Office, with one or two millions of capital," which project also fell to the ground.

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[*] Wealth of Nations, 5th Edit. p. 146—148.

[†] *Vide* Mr. Hendriks' valuable papers on the *First Parliamentary Committee on Insurance.*—Assurance Magazine, Vol. IV.

Such were the circumstances, and such the fate, of the first attempts to establish Corporations for Marine Insurance in this country. But the tables were soon to be turned. That which flattery, the bribery of officials, or the requirements of commerce, had alike failed to obtain, was still to be had at a price. *Money* was the motive power; but it must come in large force in order to take proper effect.

The various schemes which we have just passed under review had, as may be supposed, excited considerable attention in the mercantile world. Notwithstanding the learned opinions of the attorney and solicitor-general to the contrary, there was a very strong feeling growing up in favor of a change from the then existing system, with its many acknowledged defects, to something better, and the plan of a corporation appeared more feasible and practicable than any thing else that had been suggested. Hence we need not be surprised to find, in a very short period, a revival of the attempts in this direction. So it was: within one year from the former defeats two fresh schemes had been organised, or rather, perhaps, two of the old ones had been reorganised, and appeared under the respective titles or cognomens of "Lord Onslow's" and "Lord Chetwynd's" Insurance projects! Their promoters immediately set to work to obtain parliamentary powers, and *how* they obtained them has been eloquently narrated by another pen:—By some inadvertence the grand committee of supply had been dismissed before provision could be made for the arrears in the civil list. The ministers were in despair, and the Companies took advantage of the necessities of the State, *to offer the large sum of £600,000 on condition of receiving his Majesty's charter for their respective Companies.* The offer was eagerly grasped by the ministry; and on evidence being given of the respectability of the members, of the cash lodged at the Bank to meet losses—of their funded property—and of the amount of business transacted, Mr. Aislabie,* Chancellor of the Exchequer, presented to the House the following message:—"His Majesty having received several petitions from great numbers of the most eminent merchants of the City of London, humbly praying that he would be graciously pleased to grant them his letters patent for erecting Corporations to assure ships and merchandise, *and the said merchants having offered to advance and pay a considerable sum of money for his Majesty's use, in case they may obtain letters patent accordingly;* his Majesty being of opinion that erecting two such Corporations, *exclusively only of all other Corporations and Societies for assuring of ships and merchandise, under proper restrictions and regulations, may be of great advantage and security to the trade and commerce of the Kingdom,* is willing and desirous to be strengthened by the advice and assistance of this House in matters of this nature and importance. He therefore hopes for their ready concurrence to secure and confirm the privileges his Majesty shall grant to such Corporations, and to enable him to discharge the debts of his civil government without burdening his people with any aid or supply."

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* *Vide* Assurance Magazine.

Of course "the most dutiful Commons" could not withstand such potent arguments. A Bill was ordered to be brought in; and shortly afterwards "the most dutiful, &c.," waited on his Majesty with an address of *thanks "for communicating the application for an Insurance Company,"* it being "*an act of so much condescention as deserved the highest return of duty and thankfulness!*" And so the Companies obtained their charters, and the world *Marine* Assurance Corporations.

CASUALTY ASSURANCE.

The next class of Insurance commanding notice was that for securing the ransom of persons who had occasion to travel, and who were taken prisoners or captives. "In those days," says a writer we have before quoted, "there was not merely a risk of storm or whirlwind. Man was more cruel than the tempest, and the galleys of the Turks were then as much feared by the masters of trading vessels as the Corsairs of the Algerine were dreaded at a later period."

Pilgrims to the Holy Land were also accustomed to effect Insurance for their personal safety, or ransom.

This class of Insurance afterwards—if, indeed, it was ever anything else—degenerated into Insurance wagers. A traveller departing on these or any long and dangerous voyage, deposited a specific amount in the hands of a money or Insurance broker, upon condition that if he returned he should receive double or treble the amount he had paid; but, in the event of his not returning, the money placed in deposit was forfeited. The Act against Gambling Assurances proved fatal to this branch of business. The author of "Panarithmologia," (1693) before quoted, says,

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* This man was afterwards expelled the House of Commons and committed to the Tower—not, however, we believe, in connexion with any Insurance projects.

"Other Assurances are made upon goods that are sent by waggon or cart, &c., by land, from all robbers or thieves, &c. Other Assurances are made upon the lives of men and women at a rate that is moderate; for by this means, if you buy any place or office that is worth £1,000, or more or less, and you have not money enough to purchase it, you borrow £400 or £500. Now, if you die, and are not in a condition to pay this money, it is lost; but if you insure your life, then your friend that you did borrow it of, will have his money honestly paid him. *Some assurances are likewise made on the heads of men;* as if a man going for the *streights*, and, perhaps, is in some fear that he may be taken by *Moors* or *Turkish* pirates, and so made a slave, for the redemption of whom a ransom must be paid, he may (ere he goes on ship-board) go to the *Insurance Office*, and advance a *premium* accordingly upon a policy of assurance; and if he be taken into slavery in the voyage, the assurer or assurers must answer the ransom that is secured to be paid on the policy."

The risks more particularly provided for in the Casualty Insurance Offices of the present day, are of an entirely different character. They relate to loss of life or limb, or other personal injury by accident; to Plate Glass and Hailstone Insurance, and other casualties of a similar character; with which most of our readers will be familiar.

ANNUITIES, TONTINES, &c.

Next, after the granting of Marine and Casualty Insurances, followed the system of granting or selling ANNUITIES on lives. The first description of annuities of which we find any record, are *Tontine* Annuities, so called from having been originated, or, at least, made popular by Lorenzo Tonto, or Tonti, a Neapolitan, who flourished about the middle of the seventeenth century. By some writers Tonti has been called the Father of Life Assurance. This claim can scarcely be admitted; for, although these annuities drew attention to the subject of life contingencies, and the recorded ages of the annuitants may have afforded valuable data for later observations, they were not based upon any certain data, but were entirely *speculative* in their character and intentions. The principle of these annuities, on Lorenzo Tonti's plan, was as follows:—A certain number of persons clubbed together a specified sum (without reference to age or sex), and at the expiration of each year the *interest* of this fund was divided amongst the subscribers *who were living;* and so on from year to year, until the last survivor received the whole of the interest.

This novel scheme had all the appearance of a profitable investment, until an inquiry was instituted to ascertain what became of the principal sum subscribed after the death of the last annuitant: the interest fund only having been awarded to the subscribers. This inquiry proved fatal to the plan, for it was found that the *principal sum* was appropriated by the founders of the scheme to their own uses. When this fact was brought to light, a modification of the system was attempted. A number of years was fixed for the continuation of the Tontine, and the entire amount originally subscribed was to be received by the member who last survived. This plan did not meet with general approbation. It possessed great inequalities, as many died without receiving any advantage whatever for their subscriptions; and others, longer lived, received, in many cases, nearly three hundred times the amount advanced. In 1689, the last survivor of a Tontine in France, a widow, at the period of her death, at the age of 96, enjoyed an income of 73,500 livres—£3,062 10s. —for her original subscription of 300 livres, of the value in British currency of only £12 10s.

The system of Tontines for money gradually merged into what were afterwards known as *lotteries*, and as such were repressed by legal enactment. Even now estates are sometimes purchased, or houses erected, on the Tontine principle of all the benefits going to the *oldest survivor*, and afterwards to his or her heirs—for women are more often the members or nominees in Tontines than men. A Tontine scheme relating to some property in the neighbourhood of *Perth*, has recently fallen in; the oldest life on the list having been that of a lady who died at Edinburgh last year, aged 106. One of the nominees in this scheme, also a female, died in 1853, aged 122 years.*

The famous Tontine scheme for enlarging and improving the Town of Folkestone, unfortunately proved a failure.

We must look to later times than those of which we now speak before we find the *doctrine of probabilities*—originating, first of all, in *games of chance*—so far developed and perfected as to be of any real use in estimating the chances, or *expectation*, of life. Without some such guide it is scarcely to be supposed that any number of persons would seek either to sell or to purchase annuities, otherwise than as occasional speculations. The uncertainty would be so great that only the most wary or dishonest would succeed. This, indeed, seems to have been the case, for the annals of that period teem with records of the doings of one AUDLEY, who, although originally only a poor clerk with six shillings a week, was "so neat an adept in the tricks of law," and so keen in his annuity dealings, which chiefly consisted in purchasing annuities well secured upon property, that he became one of the richest men of his time. His mode of action may be best judged of by the reply made to one of his victims who accuses him of having no conscience,—"We monied people must balance accounts. If you don't pay me my annuity you cheat me; if you do, I cheat you."†

Passing from Audley and his class, of whom there were then, as now, too many, we come to notice a man of very different character. PASCAL, in his celebrated "Provincial Letters," had already suggested the application of the teachings of the theory of probabilities to the wants of mankind. These letters were read wherever books found their way. About this time the States-General were negociating some life-payments, and that clever statesman John de Wit, "added one more obligation to the many received from that distinguished man by employing the theory which Pascal suggested for the requirements of his Government." He sought for and investigated all the available data of that period, and brought his own experience and great power of mind to bear upon the subject, by which means he solved problems, and laid down general principles which hold good to the present day. His report and treatise on the terms of Life Annuities was the first known production of the kind, and the lapse of two centuries has not lessened its importance in the eyes of learned and competent authorities.* From this time Life Annuities grew gradually into repute, and most Governments have used them as a means of raising money for national purposes. The formation of correct tables of mortality at later periods has done much to advance and extend the system ; but, however much we may claim credit for this, we must always remember that to Holland belongs the credit of first applying mathematical calculations to political questions, and that her great statesman was the first who, since the fall of the Roman Empire, had attempted to fix the rate of annuities according to the probabilities of life.

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* Mary Benton:—her portrait was published in the *Illustrated London News*, about a year before her death.

† Francis' Annals, &c.

FIRE INSURANCE.

About the period to which we have now arrived, attention was beginning to be directed to the subject of FIRE INSURANCE. It is true, as we have seen, that in the early Saxon Guilds, loss by fire was one of the calamities provided against; but the compensation so provided must necessarily have fallen very far short of that required in an increasing commercial community. It appears also that *superstition* had some share in retarding the progress of Fire Insurance, as in a later age, amongst uneducated people, it has operated against the progress of Life Assurance. Mr. Pocock found, during his researches, that "some of the very earliest proposals for insuring dwellings from fire, although they were explained and understood with a degree of sagacity and clearness far beyond the time at which they were drawn up, were almost regarded as presumptuous schemes, wherewith Providence might be tempted, and likely to excite injurious notions of the party by whom the security was offered;" and as an instance of this feeling, he quotes the reply of Count Anthony von Oldenburgh, who, on having a scheme for Fire Insurance, presently to be noticed, submitted to him, admitted that the object of the plan was good, but considered that if he engaged in it, Providence might be tempted, his own subjects be displeased, and himself accused of avarice ! But for this superstitious fear, the Germans might have claimed the credit of laying the foundation of the present system of Fire Insurance.

The scheme presented to Count Anthony Gunther von Oldenburgh, in 1609, was "for the Lords of Estates insuring the houses of their subjects against fire, by proposing to them that they should either singly or united, set a value upon their houses, *and for every one hundred dollars of valuation pay him one dollar yearly.* For this the landlord was to engage, that in case, by the will of God, their houses should be consumed by fire, caused otherwise than by the misfortunes of war, he should take the loss upon himself, and pay to the sufferers as much money as might be sufficient to rebuild their dwellings." The author of this design, continues Mr. Pocock, "expresses his confidence, that although the losses might at first fall heavy, a considerable sum might be thus gradually raised from year to year; and that if a calculation were to be made of the number of houses destroyed by fire within a certain space, the loss would not nearly amount to the money accumulated in that time. It was, however, recommended, that *not all the houses in every town should be included, as their value might prove too considerable;* but only that some certain dwellings should be received into the Association," a regulation which some of the modern offices might take a lesson from: for having a number of risks side by side has been the cause of winding up several Fire Offices of modern date.

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* *Vide* Assurance Magazine, Vol. ii., where the entire Treatise of De Wit has been (thanks to the ingenuity and perseverance of Mr. Hendriks) reproduced afte lying hid for nearly two centuries.

Mr. Pocock points out, that in the preceding proposal "are the essential elements of all insurances: average of loss, and a fund provided for repayment by accumulation." Although Count Oldenburgh did not carry out this proposal, for the reasons stated, he considered that Companies of individuals might do so. We do not, however, find records of anything being done with this view until near the close of the 17th century. On the 15th day of October, 1681, it was declared by an Act of the Corporation of London, that an Insurance fund should be formed under the direction of a committee, to meet at Guildhall every day, from three to six o'clock, for perfecting "the same undertaking to the good satisfaction of all persons, both citizens and others, that have or shall have any interest in any building there." On the 16th of the ensuing November it was agreed, at a Court of Common Council, "that books should be prepared by the 1st December following, and lodged in the chamber of London, for receiving and entering subscriptions; and that lands and ground-rents to the value of £100,000, should be forthwith settled as a fund to insure such houses as should be subscribed for. Also, that thereafter, as subscriptions should be made, a further additional fund, by the premiums which should be received, should be made. *The premium for insuring brick houses to be £4 per cent., and for timber houses £8 per cent.* But this (adds the Rev. John Strype, who was contemporaneous with the design) would not take, perhaps because the credit of the City at this time was but low."[*]

The *first* Fire Insurance Office which actually transacted any business in this country was one started in 1696, under the name of "The *Amicable Contribution*," which name was very soon afterwards changed for the far more appropriate one of "The *Hand-in-Hand*." The office was founded on the mutual principle, and by the 26th of June, 1718, had insured as many as 3,666 houses. The office is still existing, and is well managed, although its business is smaller than some of its later constituted rivals.

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[*] We have just read, with much interest, Mr. Samuel Brown's paper on Fire Insurance, published in the *Journal of the Statistical Society*, June 1857. His historical facts are based upon Mr. F. G. Smith's paper on Fire Insurance, in the edition of the *Encyclopædia Britannica*, now publishing. They confirm, in all essential respects, those above given, with this addition, "In 1681, 1682, and 1683, the Journals of the Court of Common Council record the signing of many policies, and refer to the discussions and arguments of their opponents; but the city authorities appear to have been soon weary of the scheme, for by a resolution of the 18th November, 1682, the court decided *to relinquish the business*, to cancel the existing contracts, and to return the money *accepted for them." Note 1857.*

CHAPTER II.

LIFE ASSURANCE.

HAVING traced the early history of Marine and Casualty Insurances, Annuity Schemes, and Fire Insurances, we now approach the subject more particularly identified with our present purpose, namely, the progress of LIFE ASSURANCE. The progress of other schemes of Insurance had undoubtedly prepared the way for that of Life Assurance, but still the principle grew slowly, and we require to carry back our historical jottings to an early period, in order to discover where and when the seeds first germinated.

We have already disclaimed the intention of disputing with the nations of antiquity the merits of originating the theory of Life Assurance. This, however, is not to prejudice our right to inquire in how far they may, either directly or indirectly, have contributed to the development of the theory of probabilities, as relating to the duration of human life. It may be regarded by some as an evidence of the spirit of inquiry; by others as an incident scarcely worth the remarking, that Pliny, in his well-known observations on the census of Vespasian, and the enumeration of the inhabitants of the country between the Apennines and the Po, takes especial care to distinguish the number of persons living at ages above 100; or, as a coincidence worthy of little note, that Plato remarked to the effect "that many persons had lived to a great age by reason of the serenity of the air, and the almost continuous summer prevailing in Egypt and Syria." But when we find a later writer (Eusebius) remarking that "the *experience* of a long series had led to the examination of the facts which had thus been handed down to his time with greater exactness;" and that about the time of the division of the Roman Empire, a table was actually in existence by which annuities could be valued, matters assume a different aspect.* But this part of the subject will be further considered in another division: at present we must confine our remarks to the progress of Life Assurance in England.

The first *parish registers* were kept in England in 1538. They had been kept long previously in Augsburg and Breslau, though it was not till the beginning of the seventeenth century that they were general in Europe. "It is worth mentioning," says Mr. Francis, "that long ere this, the Paternal Government of Peru kept a register of all births and deaths throughout the country;

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* For further investigation into these and similar points, see *Assurance Magazine*, Vol ii.—*Hendriks' Papers.*

exact returns of the population being made every year by officers appointed by the state." Or look still further back, and we find the Romans, from the time of Servius Tullius downwards, "took a census every fifth year; and the right of citizenship was involved in any one failing to comply with the requirements of his age, name, residence, the age of his wife, the number of his children, slaves and cattle, together with the value of his property." But as they do not seem to have kept any register of burials, it is probable that the chief object of the census was to raise money for the purpose of conquest. Even in England, neither the age nor the cause of death was inserted in the early parish registers. By degrees this second deficiency became supplied, but it was not till 1728, or nearly two centuries after their first adoption, that the *ages* of the dead were introduced. "John Smart, of Guildhall, London, Gent.," in the 2nd edition of his admirable Tables of Interest, Discount, Annuities, &c., published in 1726, suggested that the parish clerks should make a return of the age of every person dying; and his recommendation had the desired effect. Towards the close of the sixteenth century the frightful ravages of the plague had caused such alarm in the country, that to "quiet public feeling' the Government of the day wisely thought it desirable to publish correct accounts of the progress of the pestilence. These were called "Bills of Mortality," and "though they were not at first maintained consecutively, they were afterwards found so useful as to be continued from 29th December, 1603, to the present time."

The next step in progression was the publication, in the early part of the seventeenth century, of "the first English work on the subject," entitled "Natural and Political Observations on the Bills of Mortality," of which the author was John Graunt, born in "Birching Lane." This has been described as "the earliest movement in economical arithmetic, and the closest approximation to the data on which Life Assurance is founded." His attention appears to have been first drawn to the Bills of Mortality by hearing "men of great experience in this city talk seldom under millions of people to be in London." He found the actual number of inhabitants to be about 384,000. It seems he made enemies by his book, as others have done who fearlessly aimed at the truth; for when the great fire of London occurred, "he was accused of having gone to the reservoir of the New River Company, and of cutting off the supply of water!"*

Many of the observations contained in this book of Graunt's, are as curious for their accuracy as for their originality. In one place he says, "seven out of every 100 live in England to the age of 70." This was probably not far from the truth at that time. Dr. Price found, a century afterwards, that in the town of Northampton, the number was ten. The Carlisle Tables show 24 as the number. Again, he says in his own quaint way, "the more sickly the years are, the less fruitful of children they be;" and although the idea was then ridiculed, it has since been found perfectly true! He laid it down that there were good reasons "why the magistrate should himself take notice of the number of burials and christenings." The reasons he assigned, however, were hardly of equal importance with the suggestion; one of them being to ascertain whether the City of London had "grown big enough." Graunt was by no means the only writer of his period who entertained grave apprehensions on the subject of the growth of London. His contemporary, Sir William Petty, who did much to direct public attention towards mortality observations, published an Essay on "Political arithmetic, concerning the growth of the City of London, with the measures, periods, causes, and consequences thereof." The fears then entertained were rather of a political than of a sanitary character; thus a Statute passed in the reign of Elizabeth declares that "such multitudes could hardly be governed by ordinary justice to serve God and obey her Majesty." Sanitary considerations were not, however, entirely overlooked, for another statute of that period lays it down that "such great multitudes of people in small rooms, being heaped up together, and, in a sort, smothered with many families of children and servants, in one tenement, it must needs follow, if any plague or any universal sickness come among them, it would presently spread through the whole city." Yet in 1581 a proclamation was issued *forbidding any new buildings.*

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* Francis.

It is worthy of note that, at this period, the present order of population appears to have been reversed; and that there were, then, more males than females living. In speaking of a peculiar disease or epidemic which had arisen, Graunt says, "for since the world believes that marriage cures it, it may seem, indeed, a shame that any maid should die unmarried, when there are *more males than females;* that is, an overplus of husbands for all that can be wives!" Referring to some calculation he had made regarding the ratio of increase of the population, he says, "According to this proportion, Adam and Eve doubling themselves every sixty-four years of the 5,610 years, which is the age of the world, according to the Scriptures, shall produce far more people than are now in it. Wherefore the world is not 100,000 years old as some vainly assert, nor above what the Scripture makes it."

The Sir William Petty just referred to, and who was the founder of the great house of Lansdowne, entered into many curious speculations and calculations; some of which attracted considerable attention at that period. He demonstrated, as he thought, conclusively, that the growth of London must stop itself before the year 1800; and that the world would be fully peopled within the next 2,000 years! But his most elaborate, not to say profane one, was "on the number of the quick and the dead who may rise at the last day." This number he estimated at 20,032,000,000, or less "than one-fifth part of the graves which the surface of Ireland will afford, without ever putting two bodies into any one grave!" That he observed upon the laws of mortality closely there can be no doubt, as his basis for the above calculation was one death in *forty* of the population annually, which was not far from the truth; and he was probably about right in saying that London doubled itself in 40 years, at the then rate of increase. Howel wrote at that period, "that for the number of human souls breathing in city and suburbs, London may compare with any in Europe in point of populousness."

These speculations of Graunt and Petty, although curious from their originality, and frequently remarkable for their truth, were still far too unconnected and indefinite to form a correct basis for the operations of Life Assurance. A pamphlet was printed in 1680, in which the whole doctrine of the value of life, then understood and acted on, as is affirmed; the utmost value allotted to the best life was seven years, at which the life of a "healthful man" at any age between twenty and forty was estimated; while that of an aged or sickly person was from five to six years,—the various limits between these two extremes constituting the whole range of difference in value. Still they did much to call public and scientific attention to the question of life contingencies; and it is more than probable that Dr. Halley, the Astronomer Royal of that day, was amongst the number whose attention was so drawn. It is certain that it was about this period that he commenced a series of observations, which resulted in the publication, in 1693, of the *Breslau Table* of Mortality, and which in addition to rendering his own name immortal, was the first important step towards raising the Doctrine of Life Assurance to a position to claim rank amongst the sciences.

It is not a little strange that while England was the theatre destined for the correct development of Life Assurance, she could not of herself furnish the data upon which its practice was to be built. The omission, before referred to, of leaving the ages unrecorded in the early parish registers of burials, caused Dr. Halley to have recourse to the registers of the town of Breslau in Silesia, which was the only place where a record of the ages of the dead was kept. From the recorded ages in the Breslau register, Dr. Halley drew a table of the probabilities of the duration of human life at every age. In it he taught with great clearness and exactness the conditions needful for the formation of rates of mortality; the manner of forming them with complete geometrical precision; of deducing a corresponding table of the present state and annual movement of the population; of reading in them the probability of survivorship of any person taken at random in a given society; of, in truth, concluding upon the probable duration of the co-existence of several individuals from the sole knowledge of their age. He, also, first developed the true method of calculating Life Annuities, taking for his guide the rate of mortality during five successive years in Breslau.*

It will not fail to strike the reader, as we proceed, as at least strange, if not altogether unaccountable, that the results of Halley's labours did not give some immediate impetus to the business of Life Contingencies. Such, however, certainly does not appear to have been the case. The publication of his Tables (in the *Philosophical Transactions* for the year 1693, No. 196), seems to have created as little attention in this country as did De Wit's Treatise on the continent, although there is great reason to believe the latter was purposely suppressed. Dr. Gouraud, in his *History of the Calculus of Probabilities*, published in Paris in 1848, an able work, after speaking of De Wit and his works in terms of admiration, adds "and again, when in 1693 an English mathematician of the highest order, proceeding in turn to study, in the obituary returns of London and Breslau, the general laws of human mortality, published on this subject a Memoir, which is read even to this day with admiration, absolutely no one took any heed of it. . . . Useless instructions! Buried in the vast and rich collection of memoirs of the Royal Society of London, the admirable labours of Halley were only to be discovered there by posterity." But so it was.

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* *Vide* Assurance Magazine.

How to account for this neglect is very difficult, particularly at a period when public curiosity had been excited by the failure of various annuity schemes,* and when one would therefore have supposed that anything which bore the semblance of truth would have been seized upon with avidity. Some writers have accounted for the fact by asserting that Halley's Tables being rather outlines of what mortality Tables should be, than complete in themselves, no one of that day fully comprehended their use. We think the more probable reason is, that, as these Tables were known to be based upon results chiefly obtained from abroad, they were not considered to be a correct guide to English mortality, and were therefore passed over for others less scientifically constructed at a later period. All who are acquainted with the Breslau Tables will, we think, agree with Mr. Hendriks, "that Dr. Halley was the discoverer and scientific arranger of what are termed Life Tables in the full and highly important modern acceptation of the term, and that in his paper (an estimate of the degrees of the mortality of mankind, &c.) he taught the world the best initiatory and theoretical form for the computation of Life Annuities and of Survivorships, from and to given ages." We must, however, proceed with our narrative.

The next English writer on the subject of Life Contingencies was Thomas Simpson, "a natural and self-taught mathematician, whose life, prior to throwing himself on the world of London for support, had been somewhat of a vagrant one." He is reputed to have cast rustic nativities, told fortunes, advanced courtships, and occasionally "varied his vagabondism" by undertaking to raise the devil; "an attempt in which he was so successful that he sent his pupil mad, and was obliged himself to leave the village." In 1740 he produced a volume "On the Nature and the Laws of Chance," and in 1742 this was followed by his "Doctrine of Annuities and Reversions, deduced from general and evident principles," with Tables showing the value of joint and single lives. In 1752 he made an additional contribution to the statistics of Annuities, as he published in his "Select Exercises" a supplement, wherein he gave new Tables of the values of annuities on two joint lives and on the survivor of two lives, more copious than hitherto. He first attempted to compute the value of joint lives; but as these were still taken from the London bills of mortality they were by no means

* *Vide* Dr. Price's and Francis Baily's works on Annuities.

fit for general acceptance. He treated his subject, however, more broadly and clearly than it had been previously treated, giving some of the best Tables of the values of Life Annuities published during that period. Though the manner in which they might be computed had been shown by Dr. Halley, it is to the self-taught Simpson we are indebted for their practical application, as we shall presently see.

Looking a little later we find, in 1760, M. Buffon, the celebrated French naturalist, publishing "a further contribution to the statistics of Assurance, in a Table of the probabilities of life, estimated from the mortality bills of three parishes in Paris, and two country parishes in its neighbourhood." The following are illustrations of his calculations:—"By this Table," he says, "we may bet 1 to 1 that a newborn infant will live eight years; that a child of one year old will live thirty-three years more; that a child of two years old will live thirty-three years and five months more; that a man of thirty will live twenty-eight years more; that a man of forty will live twenty-two years longer, and so through the other ages." He adds "the age at which the longest life is to be expected is 7, because we may lay an equal wager, or 1 to 1, that a child of that age will live forty-two years and three months longer. That at the age of twelve or thirteen we have lived a fourth part of our life, because we cannot reasonably expect to live thirty-eight or thirty-nine years longer; that in like manner, at the age of twenty-eight or twenty-nine, we have lived one-half of our life, because we have but twenty-eight years more to live; and lastly, that before fifty we have lived three-fourths of our lives, because we can live but for sixteen or seventeen years more." It is wonderful how nearly correct some of these estimates have since been found.

It is particularly noticeable that nearly all those schemes which we now-a-days look upon and claim as resulting from the development of the science of Life Contingencies, were more or less anticipated by the early writers on the subject. Take the case of endowments for children—a good and wise provision in many cases—and we find the practice applied in a familiar manner, nearly two hundred years ago, in illustrating the practice of usury,—vide "*A discourse upon Usurie, by waie of dialogue and oracions, for the better varietie and more delight of all those that shall read this treatise, by Thomas Wilson,* Doctor of the Civil Lawes, one of the Maisters of his Maiesties honourable Court of Requests. Imprinted at *London* by Roger Warde, dwelling neere Holbourne Conduit, at the sign of the Talbot.—1584," wherein the writer says, "A merchant lendeth to a Corporation or Companie an hundred pound, which Corporation hath by statute a grant, that whosoever lendeth such a summe of money, and hath a childe of one yeere, shall have for his childe, if the same childe doe live till he be full fifteene years of age, 500 li (£) of money; but if the childe die before that time, the father to lose his principal for ever; whether is this merchant an usurer or no? The lawe saith, if I lend purposely for gaine, notwithstanding the peril and hazard, I am an usurer." He then illustrates the other side of the question by an Annuity problem:

"A Corporation taketh a 100 li. of a man, to give him 8 in the 100 li. during his life without restitution of the principall. It is no usurie, for that here is no lending, but a sale for ever of so much rent for so much monie." In those days, when "usurie" was constituted a penal offence, such questions were not unfrequently rising.

Our remarks have hitherto been confined chiefly to English writers and mathematicians; but the mere mention of the name of Buffon opens up associations of a brilliant array of continental writers—many of them contemporary with him—who have contributed in no small degree to the development of the science of Life probabilities. For the reader's further acquaintance with them we will refer him to one of the most excellent papers ever penned on such a subject, an article *On the Origin and Progress of the Calculus of Probabilities*, by Samuel Brown, the Actuary of the *Guardian* Assurance Company, in the sixth volume of the *Assurance Magazine.*

We have spoken of Pascal and De Wit. With the name of the former is connected that of the Chevalier de Mere, by whom Pascal was furnished with a couple of problems for solution connected with the *laws* of chance in the throw of dice; which solution was afterwards generalized by Fermat. A few years afterwards Huyghens, a celebrated mathematician, published a work in Dutch, containing several curious problems of a like nature. But as no immediate application was made of them to Life Contingencies, we must return to the grand pensionary De Wit. "In 1761," says Mr. Brown, "this great man, celebrated alike as a statesman and mathematician of the highest repute, who had already published, in 1650, a work on curves, to which Condorcet refers in terms of eulogy, conceived the design of applying the doctrine of probabilities to the valuation of human life in the question of Government Annuities. Collecting the registers of births and deaths in various towns in Holland, he used the results to estimate the true value of a Life Annuity, in the report which he prepared on the resolution of the States-General, passed 25th April, 1671, to negociate funds on Life Annuities." This report, as we have said, has recently been brought to light by Mr. Hendriks, who remarks that "It is entitled to be considered as the first known production of any age, treating, in a formal manner, the valuation of Life Annuities."

One of the earliest applications of the theory of probabilities to moral and judicial events was by N. Bernouilli, in 1709. Taking the rules already laid down by Huyghens, he proceeded to estimate, amongst other things, *the time after which an absent person may be reputed to be dead;* the premium to be paid for assuring to a young girl a dowry or annuity on the day of her marriage; the relative value of differing testimonies; *and the comparative chances of the guilt or innocence of an accused person.* But what shall be said of a book, published a little later, by "John Craig," wherein he proposes to convince Jews, and to convert infidels by the aid of geometry and algebra!

The great work of this time, however, was undoubtedly the *ars conjectandi* of James Bernouilli, completed and published by his brother Nicholas—the N. Bernouilli of the previous paragraph—in 1713, after the death of the original author. "The views of James Bernouilli," says Mr. Brown, "were so original and profound that they took precedence of all writers of that period."

Of the continental writers of this and more recent periods we must make particular mention of Rémond de Montmort, Father Prestet, Leibnitz, Dupré de Saint-Maur, Daniel Bernouilli, D'Alambert, Euler, Lagrange, Laplace, Condorcet, and by no means least, M. Quetelet, the Royal Astronomer of Belgium; with others whom we shall have occasion to mention as we proceed,—all throwing a charm over the science with which their names have become associated. To the English writers of this period we must add Wallis, Short, Morris, Bayes, and De Moivre.

While glancing at the continental writers, it will not be inopportune briefly to survey the progress of Life Assurance on the continent, more particularly as we may not have another opportunity of doing so through these pages. Such a phalanx of writers should betoken great results. But the facts are the other way. This has, to all appearance, arisen not so much from the less provident habits of the people in some of the continental countries, as from prejudice and direct legislative prohibition in many cases! Thus in *France* an ordinance (called the *Great Marine Ordinance*) of the reign of Louis XIV, dated 1681, says "we forbid making of any Insurance on the life of men;" although it afterwards gives a qualification: "nevertheless those who redeem captives may have the price of the redemption assured upon the persons whom they withdraw from slavery, which the assurers are bound to pay, if the redeemed on his way back is retaken, killed, drowned, or if he perish *by other means than natural death*." In the *Netherlands* an ordinance of Philip the Second, dated 1570, is alike prohibiting. The Civil Statutes of *Genoa*, dated 1588, contain similar provisions, with a proviso against gambling insurances, as follows: "securities, bonds, and wagers, may not be made, without the license of the senate, upon the *life* of the Pope, nor upon the life of the Emperor, nor upon the life of Kings, Cardinals, Dukes, Princes, Bishops, nor upon the life of other lords or persons in constituted dignities, ecclesiastical or secular. Neither may they be made upon the acquisition, loss, or change of lordships, governments, kingdoms, provinces, duchies, cities, lands, or places. . . . Nor upon expected famine or war, or the contrary, &c." Such a statute speaks of speculation in days gone by. The 24th article of the *Amsterdam* ordinance of 1598 recites, "We expressly prohibit insurance of the life of any person, and likewise wagers upon any voyage of frivolous purpose; and where they are made we declare them void." The *Rotterdam* ordinances of 1604 and 1635 repeat the latter injunction. In France, the custom, if not the law, has become modified, and Assurance Companies have sprung up. The earliest of these were unfortunate, and this had the effect of making Life Assurance again unpopular there. There are now, we believe, only *five* French Life Companies of any note, viz., the *Generalé*, *Nationalé*, *Union*, *Phœnix*, and *Caisse Paternellé*, and these have all been established since 1819. A few years ago there were some five or six others, but they have all since voluntarily given up the business of Life Assurance, and put their affairs into liquidation.

Mr. Hendriks estimated, a few years since,* that the whole sums assured in France, as payable at the death of persons, did not exceed one million; the larger number of policies being for short term risks, or renewable only for a limited period. There are, however, some *twenty millions* assured by the associations of *Tontinieres* for deterred annuities and endowments payable in lifetime; and a large *Fire* business also is done—larger in proportion than in England—probably in some degree attributable to the fact of its being unfettered by restrictive duties! How different the customs of neighbouring countries! In England the sums invested in Life Assurance probably stand as 10 to 1 against the sums invested in annuities. In France it is 20 to 1 the other way. Even up to a comparatively recent period the writers in France have not hesitated to speak in the most disparaging terms of Life Assurance. Thus, in a work of some note published at the close of the last century (1783), the writer says—"At Naples, Florence, in England, and in other places, assurances on the lives of men are allowed to be made; but *this kind of assurances are not assurances properly so called, they are true wagers.* These wagers, improperly called assurances, are prohibited in Holland and several other countries. For a long time they have been prohibited in France, and this prohibition has been renewed by the marine ordinance." Then he valiantly exclaims—"Man is beyond price! The life of man is not an object of trade, and it is odious for his death to become matter for mercantile speculation; and, as observes Grivel, these kind of wagers are of sad augury, *and may occasion crimes.* Such assurances are, therefore, absolutely void. The premium stipulated is not even due!" Previous writers had opposed *Marine* Insurance just as strenuously.

It is but fair to add that the present Emperor (Napoleon III.), in addition to the many other social benefits he is conferring upon the French nation, appears most desirous of aiding in the spread of Life Assurance in his Empire. He has recently (1867) bestowed titles of dignity upon several persons who have been actively engaged in reforming the principle and extending the practice of Life and Casualty Insurance; and in a few years the fruits of his sagacity will be more apparent. Several new French Life Companies have recently been founded, and some of the English Companies are transacting a large Life business there.

In *Germany*, Life Assurance is spreading rapidly, and the native Companies are for the most part doing well. Many of the British Life Offices are now doing a large business in the north of Europe. In *Australia* both Life and Fire Businesses are rapidly extending;† and in *America*, or more correctly speaking, the *United States*, the growth and development of sound Insurance Associations is so remarkable as almost to rival those on this side of the Atlantic, as the following figures will show:—In the year 1866, 37 offices issued 131,246 new policies, insuring 42,047,616 dols. The average number of policies for each office being 3,547. The total amount assured by these offices is 398,212,142 dols. The total assets are 89,565,480 dols., and the claims paid in 1866 were 6,140,553 dols.

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* *Vide* Assurance Magazine.

† *Vide* Assurance Magazine, Vols. ii. and iv.; Mr. Hendrik's Papers, and Mr. Samuel Brown on the Progress of Life Assurance on the Continent.

CHAPTER III.

THE SUBJECT DIVIDED INTO DISTINCTIVE PERIODS.

Having traced the progress of Life Assurance through the period of its early development, we have now to note its progression during the period which has brought it into active practical application. The most intelligible way of doing this will be to mark the several epochs of progression under their characteristic heads. Thus, our First Division will commence in 1698, and terminate in 1760; it will be called the period of "Speculative Assurances." The next division will commence in 1762, and terminate in 1815; this will be called the "Transition Period." The Third Division will commence in 1816, and terminate in 1844; this will be called "The Golden Age of Assurance Companies." The Fourth Division commences in 1844, and terminates with 1855; being called "The period of Bubble Companies." The Fifth period commences in 1857 and continues to the present time; it is entitled "Modern Assurance Companies." The reasons for these divisions of the subject, and the titles by which they are severally designated, will be more particularly set forth as we proceed.

FIRST PERIOD—1698 TO 1760.

"SPECULATIVE ASSURANCES."

Although the *Amicable*[*] Society is generally considered to have been the earliest English Office for granting Assurances, we have records of the existence of at least two schemes of a similar character prior to it, which deserve a passing notice. The first was projected by the Rev. William Assheton, D.D., Rector of Middleton in Lancashire, "for the benefit of the widows of clergymen and others, and for settling of jointures and annuities." The design was undertaken by the Mercer's Company in London, which, in 1698, settled the sum of £2,888 per annum, as a security for the yearly payment of £30, during the life of any widow whose husband had, in his health, subscribed £100 to the fund, which was the limit allowed. Married men under 40 might not subscribe more than £500, or under 60 more than £300. The scheme, however, did not succeed. In 1699 another similar institution was formed under the name of "The Society of Assurances for Widows and Orphans," which has, also, long since passed away.[†] Each of these Societies did a large business, and their downfall may be traced to the existence of no correct data to guide them in their operations.

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[*] The *Amicable* is now about to pass out of existence as a separate office, arrangements having been made for its absorbtion by the Norwich Union Life Office to prevent its dying of inanition.—Note 1866.

[†] Pocock.

A lapse of seven years from the last date brings us to *The Amicable Society, or Perpetual Assurance*, as it was then called, founded in 1706; and fourteen more years place upon the stage the *Royal Exchange* and *London Assurance Corporation.* The events attending the formation of these Companies will be more fully reviewed at the commencement of our next chapter.

The periods intervening between the establishment of the Offices just named produced swarms of other Insurance schemes under almost every conceivable title. Thus, in the next year after the establishment of the *Amicable*, Charles Povey projected a Company to be formed in Hatton Garden, for four thousand healthy persons between the ages of 6 and 55, under the name of "The Proprietors of the Traders' Exchange House." Every subscriber was to pay 2s. 6d. per quarter, for which premium three hundred pounds were to be *equally distributed* to the nominees of the assured persons dying in any quarter, with one halfpenny from the clear profits of *the printed papers sold by the Office;* about which more will be said presently. Soon afterwards we find this same Povey, who had rendered himself conspicuous as the author of a publication entitled "The unhappiness of England as to trade," projected the *Sun* Fire Office, and *sold it* to certain purchasers, who, under a settlement in April, 1710, constituted themselves into a Company. In addition to his endeavours to remove the evil consequences resulting from fires, he invented a machine to extinguish them, long known as "Povey's Fire Annihilator." About this period "The York Buildings Company" and "The English Copper Company" were also started; and other Societies were formed "for the purpose of assuring the lives of particular classes of persons, as members of the army and navy, clergymen, schoolmasters, &c."*

About this date, also, commenced a system of speculative assurances known as "the little goes." A number of persons combined, and each subscribed 5s. fortnightly, inclusive of policy stamps and entrance-money, on condition of £200 being paid to his heirs and executors. In another of these schemes 5s. a quarter entitled the subscriber's representatives to receive £120 on his demise; while a third, called the "Fortunate" Office, was to provide marriage portions of £200 for those who paid 2s. per quarter. One of these "little goes" was held at the Cross Keys, in Wych Street; another called the "British Apollo," in Rolls Court, Fleet Street; and a third in Petticoat Lane. These were for the most part swindles, but a chronicler of the time says—"The success of these schemes sharpened the invention of the thrifty, and immediately almost every street in London abounded with Insurance Offices, where policies for infants, three months old, might be obtained for short periods. From these they diverged into other ages, and various descriptions of persons."

The number of Companies formed, and the variety of risks undertaken, afforded a prolific fund of amusement for the wits of the day.

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* Pocock p. 95.

Thus we find one of them referring to Fire Companies:—

Projecting, sure, must be a gainful trade,
Since all the *elements* are bubbles made;
They're right that gull us with the dread of *fire!*
For fear makes greater fools than fond desire.

And another hits at the Life Offices, professing to give the mortuary registers of the members. Thus:—

"Died—Of a six-bar gate, 4;—of a quick-set hedge, 2;—broke his neck in robbing a hen-roost, 1;—surfeit of curds and cream, 2;—took cold sleeping at church 11;—of October, 1;—Of fright in an exercise of the train-bands, 1."

And a still later writer thus narrates his grievances:—

" By Fire and Life Insurers next
I'm intercepted, pester'd, vex'd
Almost beyond endurance;
And though the schemes appear unsound,
Their advocates are seldom found
Deficient in assurance."

New Monthly Magazine.

At this period a custom existed with the Insurance Offices of printing historical or political papers, in the form of newspapers, which will explain a promise made by "The Proprietors of the Traders Exchange House" scheme, that every member was to have a halfpenny from the clear profits of the papers sold by the Office. Hatton, the old London Historian, speaking of the *Union* Fire Office, established in 1714, says, "every subscriber, desiring the same, may have one of the printed papers they publish once or twice a week gratis." A publication of the same kind was, also, issued by the *Sun* Fire Office, in 1724, called *The Historical Register*, which was presented to the Insurers as a newspaper. It was continued until 1743, having been first published weekly, and then quarterly, when each register consisted of a thick octave pamphet, sold to the public at one shilling."* These publications have proved a valuable addition to our historic literature, and were most likely conducted at a far less expense than many of the Offices now go to annually in advertising.

A notable point of comparison between the Assurance Offices of this period and those of modern times, is the situations selected for carrying on business. The modern Offices rival each other in the splendour of their buildings, and the prominence of their situation. Whenever an eligible "corner" becomes vacant, the Insurance Offices and the gin-palaces enter into fierce competition for its occupancy; and the one that "comes down" most handsomely gets it. Assurers, as they walk along the streets, may constantly see portions of their "bonuses" irretrievably invested in bricks and mortar. In the "good old times" the *Sun* took up its abode at the "back of the *Royal Exchange.*" *The Royal Exchange* Office did business *against the Exchange*, on Cornhill; also "at the Rainbow Coffee-house, by the Inner Temple Gate, in Fleet Street." The great *Equitable* held its first meeting at the "White Lion in Cornhill." A Fire Insurance Company, with a capital of two millions, was held at the Three Tuns, Swithen's Alley; an Annuity Society at the Rainbow, Cornhill;

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* Pocock, p. 96.

another Fire Company at the Swan and Rummer; an Assurance Office "for Horses dying natural deaths, stolen, or disabled." very properly, at (the Crown Tavern,) Smithfield. Another Assurance Office "for all masters and mistresses against losses they shall sustain by servants, thefts, &c., 3000 shares at £1000," at the *Devil* Tavern! and a "new Assurance Office upon the lives of men, women, and children," at the Bell and Dragon, otherwise called Lincoln's Inn Eating House, in Portugal Street, at Lincoln's Inn Back gate!*

It was during the period of which we are speaking that most of the Companies referred to at the commencement of this Chapter were formed. David Macpherson, in his *Annals of Commerce*, says, "Out of above two hundred visionary schemes that were formed and carried into effect at that time," only four existed at the time he wrote, and two of those have since passed away. A little later, another historian tells us that "The *Laudable Society*, the *Amicable Society of Annuitants*, the *Provident Society*, the *London Annuity Society*, the *Equitable Society of Annuitants*, the *Westminster Union Society*, the *London Union Society*, the *Consolidated Union Society*, the *Public Annuitant Society*, the *Rational Society*, the *Friendly Society of Annuitants*, and others, (whose names are now lost or forgotten,) *were all established about the years* 1770 *and* 1771." But that which strikes the historical reader as one of the most remarkable features of the times, is the *purposes* for which many of the so-called Assurance Offices, were got up. Here we find "A Mutual Assurance Company was formed to aid an adventurer with funds to raise a vessel which, laden with the treasures of the East, had been lost on her passage home; the peculiar feature of the transaction being that if any of the association should die before the object was accomplished, their share was to be transferred to the remaining adventurers." This made the hazard a double one. Another Company having at its head "three English peers, two Bishops, four Irish peers, with many eminent merchants and gentlemen" petitioned the king that it might be incorporated *for purchasing and improving forfeited and other estates in Great Britain*, for granting Annuities, and for insuring lives; seeing this will (were the words of the petition) unite by interest many of the King's subjects against the Pretender and his adherents for ever. In order to which several of the petitioners have sent persons into Scotland for purchasing the forfeited estates there, *and have since by voluntary subscription to the Governor and Company of Undertakers for raising the Thames water in York Buildings* raised a Joint Stock of £1,200,000, on the credit of which estates they propose to grant annuities for and to insure on lives; for the benefit of such of his Majesty's subjects as are straitened in their fortunes by the reduction of interest." This scheme seems as unintelligible as it is voluminous. The further we look back the more daring and unaccountable are some of the schemes proposed. As early as the middle of the 17th century, Assurance Companies were resorted to for carrying into effect any ingenious or costly project, when all other means had failed.

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* For numerous other similar examples see Pocock on Life Assurance, and Francis' Annals of Life Assurance, &c.

Thus, in 1643, one Captain John Bulmer, an unsuccessful engineer, published a scheme entitled "*Propositions in the Office of Assurance, London, for the blowing up of a boat and a man over London Bridge.*" In this paper the projector covenants for himself, his heirs, &c., to perform the undertaking within a month after intimating from the office he was ready, "so soon as the undertakers wagering against him 6 for 1," should have deposited enough to pay the expenses of making the boat and engine, he also subscribing his own proportion. The money so collected was to remain in the office until Captain Bulmer had either performed his contract, when he was to receive it all, or till he had failed, when it was to be repaid to the subscribers; "and all those," adds the paper of propositions, "that will bring their monies into the office shall there be assured of their loss or gain, according to the conditions above mentioned."* A hundred other schemes, equally absurd and unproductive of any good, were brought forward, some meeting with good success, while the new and respectable Companies made but slow progress; "Onslow's Insurance,"(as the *Royal Exchange* was called,) and "Chetwynd's Bubble," (the title given to the *London*,) being hawked in Change Alley, along with Companies for "importing jackasses" and "fatting hogs."†

But the distinguishing feature of the age was the "Gambling" tendency of nearly all the Offices. Under the title of "Insurance Wagers" every conceivable description of speculation was entered into. On one day we find the Offices wagering £30 against £100 that King William could not reduce the city of Namur before a given date.‡ The next, on the period of favour to be enjoyed by the mistresses of some foreign potentate. And the third day, on the *sex* of the Chevalier D'Eon, whether he was a *male*, as he pretended to be, or a *female* as he was reputed to be.§ The duration of the lives of persons believed to be on their death-bed, was a common hazard; and the author of "Every Man his own Brother," was not far wrong when he said the dissolution of persons, who saw themselves insured in the public papers at 90 per cent., was not unlikely hastened by such announcements.

Even the morality of the newspapers of that day was shocked by such proceedings: we find the *London Chronicle* of 1768 thus declaiming, "The introduction and amazing progress of illicit gaming at Lloyd's Coffee-house is, among others, a powerful and very melancholy proof of the degeneracy of the time. Though gaming in any degree is perverting the orignal and useful design of that Coffee-house, *it may be in some measure be excusable to speculate on the following subjects*:—Mr. Wilkes being elected member for London; *which was done from 5 to 50 guineas per cent.*;—Mr. Wilkes being elected member for Middlesex, from 20 to 70 guineas per cent.;—Alderman Bond's life *for one year*, now doing at 7 per cent.;—On Sir J. H. [mark the modesty!] being turned out in one year, now doing at 12 guineas per cent.;—On John Wilkes' life *for one year*, now doing at five per cent. *N B.—Warranted to remain in prison during that period;*—On a declaration of war with France or Spain in one year, 8 guineas per cent. But," continues the sensitive journalist, "when policies come to be opened on two of the first peers in Britain *losing their heads at 10s. 6d. per cent.*, or on the dissolution of the present parliament within one year, at 5 guineas per cent., which are now actually doing, and underwritten *chiefly by Scotsmen*, at the above Coffee-house, *it is surely high time to interfere.*"

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* Pocock, pp. 89, 90.

† Francis' Annals, p. 79.

‡ William III. was, at this time, carrying on a war with France.

§ This extraordinary personage, who had been acting in a diplomatic capacity in several countries, and who was for some time in London as a minister plenipotentiary from France, was proved upon a trial held in the King's Bench, in *an action to recover wages as to his sex*, to be a *woman*, July 1, 1777. He subsequently wore female attire for many years; yet, at his death in London, in 1810, it was manifest, by the dissection of his body, and other undoubted evidence, that he was of the male sex.—*Biog. Dict.*

In the *Public Advertiser* of Dec. 6, 1771 (then the leading newspaper) we find the following paragraph:—"We have the pleasure to assure the public from the most undoubted authority that the repeated accounts of her Royal Highness the Princess Dowager of Wales being very ill, and her life in great danger, are entirely false; *such reports being only calculated to promote the shameful spirit of gambling by insurance on lives!*" Contrast this state of things with the Assurance contracts of modern date, and see how in this, as in other matters, the times have changed.

The reason of the change may be best gathered by the perusal of the following clauses of an Act of Parliament passed in the 14th year of George III., not very long after the period of which we have been speaking, which Act is generally known as the Act for the suppression of *Gambling Insurances.*

It enacts that "no Insurance shall be made on the life of any person, or on any event whatsoever, where the person on whose account it shall be made *shall have no interest*, or by way of *gaming or wagering;* and that every such Insurance shall be null and void." Again, "It shall not be lawful to make any policy on the life of any person, or on any other event, without inserting in the policy the name of the person interested therein, or for what use, or on whose account such policy is so made." Further, "where the insured has an interest in such life or event no greater sum shall be received from the insurer *than the amount of the interest of the insured in such life or event.*" Upon this last clause we shall have some remarks to make in another place. But thus ended, at one blow, the period of "Gambling Insurances."

It comes strictly within our scope (as will be hereafter seen) to notice the attention which, about this period, was beginning to be paid to the question of *interest* and arithmetic. Several most interesting works were written thereon, but we have only space to glance at their title-pages, and one or two of their other peculiarities. In 1693 was published a book called *Panarithmologia*, (before quoted) being

"A Mirror
Breviate
Treasure
Mate
for
Merchants.
Bankers.
Tradesmen.
Mechanicks.

And a Sure Guide for Purchasers, Sellers, or Mortgages of Land, Leases, Annuities, Rents, Pensions, &c., in present Possession or Reversion, and a *constant Concomitant* fitted for *all Men's occasions* Calculated and Published by W. Leybourn, 1693."

The Author says,

"For the *second part*, which consists of *simple interest* and rebate, at several *rates* and *times*, they are already in every man's hands; and for tables of *compound interest* at several *rates* and *times* (for one pound only) are no new things. But the first that ever did take the pains to render them in such a form, as to resolve by them, all such questions as relate to *anatocisme*, on *compound interest* by *addition* and subtraction only; without multiplication or division (as these will do) *I account myself the only* DRUDGE, it being rather *labour* than *art* that brought it to what it is here rendered: and now, if any person shall object that the pounds, shillings, pence, and farthings will not answer in all cases (exactly) to what decimal fractions, to *eight*, *nine*, *ten*, or *more places* will afford; I answer, it is true, and I know it as well as himself; but this Enchiridon was not published for carping *criticks*, but for the use and benefit of honest dealers one with another; and it is of sufficient exactness to perform whatsoever is promised by it; and yet, that exactness (as may be acquired) is not omitted; for if he pleases to advise with the latter part of the second Book hereof, in those particulars, he may there receive ample satisfaction to his expectation."

Another book, published in 1728, has the following prolix title:—

"An Estimate of places for life, shewing how many years' purchase a place for Life is worth; how long a man must hold his place to have the value, principal, and interest of the purchase-money: how much he has coming in per cent. per annum for his money; what a place or life is worth, the income not exceeding £1,000 per annum; all at one view; *the whole being calculated upon the chances of the probabilities of lives in general.* To which is prefixed an account of places which are in the disposal of the Lord Mayor, Aldermen, and Common Council of the City of London, also of others more immediately belonging to the Crown; being collected from the latest and best lists extant; wherein is shown the nature and respective business of the principal officers, and in whose gift most of the said places are. The whole being interspersed with directions and instructions for obtaining places in general. By Richard Hayes, Teacher of Merchants' Accounts, in Great Eastcheap. Author of the new Method for Valuing Annuities upon Lives. London: Printed for W. Meadows, at the Angel, in Cornhill, M.DCC.XXVIII."

Here is the author's apology for the publication of the book, which is not quite so long as the title.

"At the request of several gentlemen who were purchasers of my New Method for Valuing Annuities upon Lives, I have been prevailed upon to spend some more of my leisure hours in making the following estimate of places of life; and finding upon observations that the purchasers of late have been allowed upwards of 9 per cent. for their money, I have, therefore, made my calculations at 9, 10, 11, and 12 per cent. Nor can I see why a purchaser should value his money at anything under the forementioned rates when he is buying of a place, if he considers that he is taking upon him an employ which may require labour and attendance to obtain the annual income such a place may be deemed to be worth; and, indeed, when he has put such a value upon his money, there is but a small variance from the usual allowances by cathedrals and colleges to the purchasers of the leases of their estates for a certain term of years."

We may pass over the morality which called for tables to estimate the value of places which the "Lord Mayor, Aldermen, and Common Council of the City of London" had to dispose of! As early, also, as 1608, a book was published in England by Richard Norton, from the Flemish of Stevinus, under the following title:—

"Disme, the Art of Tenths; or, Decimal Arithmetic: teaching how to perform all computations whatever by whole numbers without fractions, by the four principles of common arithmetic, namely, Addition, Subtraction, Multiplication, and Division; invented by the excellent Mathematician, Simon Stevin."

But this work probably bore no relation to Life Contingency calculations.. Not so, however, with *Clavis Usuræ; or Key to Interest*, by John Ward, which has been referred to by several writers, as a proof of the attention beginning to be paid to the subject.

CHAPTER IV

SECOND PERIOD—1762 to 1815

"TRANSITION PERIOD."

The year 1762 ushered into existence the *Equitable* Society, and with it a new era in the *practice* of Life Assurance. Notwithstanding the brilliant array of names we have already seen associated with the development of the *science*, we cannot escape from the fact that the *practice* had hitherto been left to a blind-fold progression: that *chance* reigned supreme where all things should have been *fixed* and *certain:* and that the improvements which from time to time crept in were rather the result of accident than design. If we want instances we need not travel far for them. Dr. Halley, as we have seen, had completed his Breslau Table of observations before the close of the 17th century: and, indeed, made great progress with his calculations of the value of Life Annuities at particular ages, yet in a money act passed in 1694, a single life was estimated at seven years' purchase only, two lives at eight and a-half years, and three lives at ten years' purchase. In another act passed nine years later (1703) these values were but slightly revised, a single life being increased to nine years' purchase, two lives to eleven years, and three to twelve years' purchase. But at the same period, and still more unaccountably, the owner of a *life* annuity might change it for an annuity for ninety-nine years on payment of four and a-half years' extra purchase—making the entire consideration money only thirteen and a-half years' purchase. Or putting it more intelligibly for the general reader, an annuity of £50 could then be secured for the period of ninety-nine years by paying down the sum of £675, while the Table *now* shews the value of such an annuity to be about £1,500. or considerably more than double. No difference in the rates of interest or value of money can reconcile or explain away such discrepancies![*]

Again, we smile with astonishment at the high rates of premium charged by the early offices, but it has been remarked—and the assertion may challenge contradiction—that for all that was then actually known those rates might as well have been *too little by half*, as they turned out to be *too much by half! Five pounds* was the premium originally demanded to assure £100 *for one year*, on a life of any age between twelve and forty-five! On the 25th day of November, 1721, the *London Assurance Corporation* granted an assurance to Mr. Thomas Baldwin on the life of Nicholas Browne for £100. In this case £5 5s. was the premium for twelve months, and this rate is known to have been continued for some time. The *Amicable* Office charged an entry fee of £3 15s. per cent. in addition to the £5 premium; and middle-aged and old lives were frequently rejected even on these terms. Mr. Babbage endeavoured to discover the circumstances which led to the fixing of 5 per cent. premiums, and came to the conclusion that it probably arose from its appearing that the annual number of deaths in London *was nearly one in twenty of the population.* But he naturally enough remarks that it must soon have occurred to any one who wished to have recourse to such transactions that the chance of a person aged twenty, dying within any given period, could not have been so great as that of a person of forty dying within the same period.

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[*] In reference to the annuity schemes of this period, Dr. Farr says, "The Life Annuity at seven years' purchase was by far the best bargain; for the interest of money being 6 per cent. the Life Annuity was worth, at Halley's estimate, thirteen years' purchase (13·4 at the age of ten) and an annuity for thirty-six years was worth only sixteen and three-quarter years' purchase. The value of a Life Annuity of £100 was £1,300, which was obtained for £714; and the *new* offer to such a purchaser was if he would advance £450 more he should obtain an annuity worth £1,660; by accepting the offer he would have gained £496 on £1,164; *by rejecting it his profit was* £586 on £714."

In addition to the premiums named, extra rates were demanded for "youth hazard," "female hazard," and "occupation hazard:" while "officers on half-pay," and persons "licensed to retail beer," were charged no less than 11 per cent. extra. Nor did the Offices, with the exception of the *Amicable*, make any return of profits to the assurers, and in this Office the divisions took place without much regard to equity. The sum considered to be profit was divided every year *amongst the policies which became claims during the year*, quite irrespective of the time such policy had been in existence; and the Society had no power of applying any portion of such profits for the benefit of the assurer during his lifetime. Such was the position of assurance business just prior to the time we are now entering upon! Need we wonder that Life Assurance was slow in becoming popular?

It is, we have no doubt, perfectly true that the Offices acted up to the principles of their constitution; but if this be admitted it only rivets us to the fact that the practice had by no means kept pace with the science. That the Offices established prior to the *Equitable* paid very little regard to the cultivation of Life business we have abundant proof. Professor de Morgan has remarked of the *Amicable* that it was "originally founded rather on principles of mutual benevolence than of mutual assurance, as now understood." And the account which the managers of the Society gave of its constitution, when opposing some new schemes in 1720, coincides with this view. They affirmed that they were a Corporation created by letters patent, 5 *Annæ Regina*, which did constitute a number of persons, not exceeding 2,000, to be a body politic, with power to purchase lands not exceeding the yearly value of £2,000; and to raise a joint-stock for the use and relief of widows and orphans, in the manner and under the regulations therein mentioned. And that the members of the Corporation did begin to act under their said charter in the year 1706, and had continued to act ever since; had admitted members, *granted policies on lives*, and improved their joint stock at interest on Government securities and otherwise, which then amounted to £50,000 or thereabouts; and that they had made *annual dividends* to the claimants of the members who had died in each year, according to the directions of the charter. That in the year 1710, and ever since, they had divided £10,000 per annum amongst the claimants; and what appeared most important for their present purpose, in the year 1707 or 1708, several persons endeavoured to get another charter for insurance on lives, *but that the same was stopped* at the Great Seal, on hearing counsel for the said *Amicable* Society, for a perpetual Insurance office.*

The *Royal Exchange* and *London Assurance Corporation* were established next after the *Amicable;* and they were the first Offices that issued life policies for fixed sums payable at death: the latter Office issued its first life policy on the 7th June, 1721. Yet, strange as it may appear, in the charter obtained by these Companies in 1720, not a single word was said on the subject of Life Assurance, nor in the preliminary Act of Parliament passed in the previous year—an Act "for the better securing certain powers and privileges *intended to be granted* by his Majesty by two charters for assurance of *ships and merchandise*, and *for lending money upon bottomry;* and for restraining several extravagant and unwarrantable practices therein mentioned." This was the Act passed by "the most dutiful Commons" on an occasion we have already noted. But within twelve months from the period the original charter was obtained these corporations were again before the "House." Fortune had not smiled favourably upon them. They had invested some portion—some considerable portion it has been said—of their funds in the "South-Sea" project, and the bubble had burst. They were, therefore, unable to perform, in full, the pecuniary engagements under which their charter had been secured; and they sought, and obtained, from Parliament some modification of these conditions.

It was under their amended or modified charter that these Companies obtained powers for assurance of lives. What had so suddenly moved them to take up this branch of business it is difficult to say; unless the following circumstance should offer any solution. Just previous to this date, a petition had been presented to Parliament, signed by Sir James Hallett, and 113 other merchants, &c., subscribers to a "Fund of £1,200,000 for granting annuities, securing fortunes to widows, orphans, and others; settling jointures on marriages, and insuring of lives, &c." The petition first spoke of the advantages of annuities; and then proceeded to point out the advantages of Life Assurance in a manner so intelligible and understandable that it would put to shame half the high-flown, but empty prospectuses of the present day. It averred that it would be of great advantage to the subjects of these realms, "especially such of them as are in trade, to use in such their trade the greatest part of the fortunes they may receive with their wives; and which they might much the better do, could they, by laying out some part of the said fortunes, receive a sufficient competency for their wives to live and subsist upon, in case they should, by the chance and hazard of trade, either fail or die, without a capacity to make any other provision for them." Further, "that it would also be very serviceable to his Majesty's subjects could they safely and securely insure upon their lives; which would encourage merchants to be more bold in their undertakings, because in case of their death before their schemes in trade succeed, their widows and families might thereby receive a benefit in a great measure to recompense the failure of such their undertakings. That persons in good offices and employments for life may, for the same reason, be induced to make provision for their families, who during their lives have an opportunity of maintaining them in good credit, but at their death very often leave them in slender circumstances."

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* Vide Mr. Hendriks' papers, Assurance Magazine, vol. iv.

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These arguments might be multiplied, but they could not be much improved upon. The Attorney-General, however, in his wisdom, reported to the Government, or the King, on this—Hallett's Insurance scheme—that in his opinion it was not advisable for his Majesty to erect "any such corporation as is therein described," and the matter, so far as the then promoters were concerned, fell to the ground.

Whether it was this project or not that turned the attention of the *Royal Exchange* and *London Assurance Corporation* to *Life* Assurance, we have now no means of knowing. But we have the most undoubted proof, that while the business in *their* Marine and Fire departments was considerable, the Life business of at least one of them—the *Royal Exchange*—was most exceedingly small. How we know this the reader shall learn. When the promoters of the *Equitable*, forty years later, were applying for a charter, the *Royal Exchange* Company opposed them, taking up the ground of the *small prospect of success;* stating in confirmation that *they* had *only received for Life Assurance premiums* during the period named (forty years) the sum of £10,915 2s. 2d.! and even these, Mr. Hendriks assures us, were for what are termed short-period risks, *insured against for generally a year, or lesser period.* "Taking this element into account," he continues, "the above receipt of premium shews that the gross *sum insured* on the average of years was not more than £5,000 per annum or thereabout, being half the amount which Life Companies have now been for many years in the habit of insuring on a single life. There is (he adds) no ground for assuming that the business of the other Corporation was more extensive; in fact, although there were at this period several Associations in activity for the grant of insurances of survivorship *annuities* for widows, and of deferred *annuities* for old age; and the history of which Associations, their quarrels, competitions, and downfall, may be seen in the writings of Dale, Dr. Price, and others; nevertheless, there is no doubt that the insurance of a *sum payable at death, was, at the time we are referring to, a contract very rarely entered upon, either by the commercial or other classes of the community.*"*

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* Assurance Magazine, vol. iv., page 308.

This, we think, brings us very clearly to understand the position of Life Assurance, properly so called, at the commencement of the period we have now entered upon. The confidence of the public had already been shaken (as we have seen) by numerous failures in annuity projects. The rates of premium demanded were exorbitant. The Companies of this period could not show that they had adopted any more reliable data for their guidance than their predecessors. The Legislature showed no disposition to encourage such Associations; and the only Society which at all laid itself out for the business—the *Amicable*—was so crippled by its constitution, or the provisions of its charter, as to be unable to grant assurances of the class which were then beginning to be most sought after. It has struck us with surprise that no earlier writer than Mr. Hendriks had pointed out the fact that the *Amicable* Corporation was not invested with the power of granting assurances at rates of premium calculated according to *age* until after 30th October, 1807; and it is only as recently as the 8th May, 1845, that it was empowered to grant assurances for *fixed sums*. The former of these powers was obtained by the *fourth* of its six charters, 48 Geo. III.; the latter by the 8 Vic., c. viii.

We can the more readily now understand how it was that when the before-named Thomas Simpson—the self-taught mathematician and astrologer—having raised himself to considerable literary fame by his various publications—delivered a course of lectures in London, in which he (availing himself of Dr. Halley's suggestions) announced the possibility of constructing a table of premiums *graduated* according to the age of the assurer, considerable public attention was excited. And that when the suggestions of Simpson had been investigated, and a graduated Table of Premiums actually computed by Mr. James Dodson, on the plan laid down by Dr. Halley, the time had arrived for the foundation of a Society which should more completely answer the requirements of the age than any one that had preceded it. And the Society which sprung out of this combination of favourable circumstances is that which we now speak of as the OLD EQUITABLE—its original title being "*The Equitable Society for the Assurance of Life and Survivorship.*"

Of course we all feel anxious for a glimpse at those mysterious figures—the first result of Halley's labours, Simpson's science, and Dodson's computation—and we have them at hand, merely premising, in the words of the late actuary, Mr. Morgan, that they, "in order to secure the stability of the Institution, had chosen a Table of observations, in which the probabilities of Life were so low, that the premiums of assurance derived from it were nearly twice as high as those which are required at present." A fact most apparent from the figures themselves:—

At the age of	Whole term Premiums for Males.	For Females.
14	£2 17 0	£3 3 11
20	3 9 4	3 14 3
25	3 14 0	4 1 5
30	3 18 7	4 4 4
40	4 17 9	5 4 8
49	6 2 5	6 11 0

It will be remarked that contrary to modern usage—which, indeed, in some few cases has gone to the exactly opposite extreme—higher rates were charged for female than male lives: and whatever *theory* may say to the contrary, *practice* has confirmed the wisdom of such a course: for hitherto female assured life has been (speaking in the language of actuaries) of *far less value than male assured life!* Nor were these pioneer actuaries wrong in putting a heavy extra per centage on retailers of beer! as witness some of the more recent reports of the Registrar-General.*

The founders of the *Equitable* were naturally anxious that it should enjoy equal legislative privileges with its predecessors. Accordingly, in 1761, a petition was presented to Parliament from the Hon. Coote Molesworth, of Chichester, Doctor in Physic and Fellow of the Royal Society; Sir Richard Glynn, Knight Baronet and Alderman of London; Thomas Pickering, of London, D.D.; John Silvester, of London, M.D. and F.R.S., "and seventy-eight others, in behalf of themselves and many others, his Majesty's most dutiful and loyal subjects." The said petition sets forth, "That great numbers of H.M.'s subjects whose subsistence principally depends on the salaries, stipends, and other incomes payable to them during their natural lives, or on the profits arising from their several trades, occupations, labour, and industry, are very desirous of entering into a Society for assuring the lives of each other, in order to extend, after their decease, the benefit of their present incomes to their families and relations, who may otherwise be reduced to extreme poverty and distress by the premature death of their several husbands, fathers, and friends, which humane intention the petitioners humbly apprehend cannot be effectually carried into execution without H.M.'s Royal authority to incorporate them for that purpose."

To effect their "humane intention" the petitioners laid down a certain plan of operation; and concluded their petition in this wise, "That establishment, by H.M.'s Royal charter, of a free and open Office of Insurance upon the plan aforesaid will, as the petitioners with great submission apprehend, be more equitable than any hitherto proposed as being calculated *for the sole benefit of the persons assured*, a method not hitherto practised, and will, as the petitioners humbly hope, in a variety of instances, prevent the before-mentioned inconveniences, and be productive of the greatest advantages to the public. That there is at present subsisting but one Corporation for the assurance of lives on the mutual plan, viz., the *Amicable*, (the *Royal Exchange*, and *London Assurance*, being proprietary) which, as the petitioners humbly apprehend, acts upon so circumscribed and narrow a plan, that very few of H.M.'s subjects do receive any benefit from it, in comparison with the great number to whom the benefit of such an insurance might be extended."

Now this petition, according to the custom in such cases, was referred to the Attorney and Solicitor-General for the time being; and their report thereon is one of the most amusing documents connected with the history of Life Assurance. These learned gentlemen remark that "1st, the petitioners propose to insure upon *cheap terms (!)*, and for a longer time than is practised at present in any Offices; to which end they have specified the rates at which the assurance is to be done;" and "2nd, they propose to raise a capital by investing the premiums, together with a small additional sum of 40s. to be deposited by every person insured to answer all losses; and by way of further security, to oblige every person insured to become a member of the Corporation, and to declare a covenant that he will bear *his proportion upon any call if the* premium and deposits should be deficient."

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* See subsequently, pages 68-9.

The said Attorney and Solicitor-General having considered the foregoing proposals, and also heard counsel in support of the petition, and against it, on behalf of the *London* and *Royal Exchange* Assurance Companies, and also on behalf of the "Corporation of the *Amicable* Society for the perpetual assurance of lives, in Serjeant's Inn," all of which did their best to oppose the formation of this office; then proceed to deliver their opinions, in which may be found some very wholesome conclusions, although it is clear that they were not learned either in the theory or practice of Life Assurance: and it is more than probable that the counsel for the opposing Companies had not done much to brighten their understandings. They were "humbly of opinion to advise H.M. *not* to comply with the prayer of the said petition for the following reasons:—

> "1st. Because it appears to us altogether uncertain whether this project will or can succeed in the manner in which it is proposed, and if the success is uncertain, the fund for supporting it, which is to arise from the profits of the undertaking, will be precarious. This *last* objection is, in our opinion, a fatal objection to the scheme; for, *though an undertaking plainly calculated for the benefit of the public may, in some instances, deserve encouragement, even where success is dubious, yet, in such cases, the projectors alone ought generally to abide the peril of the miscarriage.* In the present proposal, therefore, whatever else may be hazardous, the capital or fund to answer the losses ought to be certain and liable to no casualty, for which reason, when the legislature enabled H.M. to erect the two Corporations of the *Royal Exchange*, and the *London Assurance*, they thought it necessary to oblige these bodies, in the first place, to raise a large capital before they began to insure. The success (they continue) of this scheme must depend upon the truth of certain calculations taken upon Tables of life and death, whereby the *chance of mortality is attempted to be reduced to a certain standard; this is a mere speculation, never yet tried in practice, and, consequently, subject, like all other experiments, to various chances in the execution.* The Tables upon which the calculations are built are the Bills of Mortality of London and the Breslau Tables; and admitting them to be strictly accurate *(of which there is strong reason to believe the contrary)* they are compounded of diseased as well as healthy persons, of those who are embarked in dangerous as well as other employments, without pointing out the proportions they bear to each other, and yet, as the petitioners propose to insure only such even of the healthy as are not employed in dangerous occupations, *the register of life and death ought to be confined, if possible, for the sake of exactness, to such persons only as are the objects of insurance,* whereas the calculations offered embrace the chances of life in general, the healthy as well as unhealthy parts thereof, which, together with the nature of such persons' occupations, are unknown numbers.
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> "As the fund to answer losses (they continue) must depend principally upon the premiums (for we pay but little regard to the small deposits on the personal covenant) the project should be *sure of success*, otherwise the adventurers will be undone or greatly injured, and the project will fall the heavier because it will fall principally upon the poorest sort—the rich having no temptation to assure. *Under these circumstances if there were no other objection against the scheme proposed, the uncertainty of success would make us fearful of advising the charter.*"

But perhaps the most curious passage in the report is the following: "We are the more apt to doubt of the event, because it has been represented to us by the affidavit of Mr. Savage, that all profit which has been received by the *Royal Exchange* Assurance Office, from the time of its commencement to the present time (40 years) amounts only to a sum of £2,651 4s. 6d., the difference between £10,915 2s. 2d. paid in premiums, and the sum of £8,263 17s. 8d. disbursed in losses,* which small profit must have been near exhausted in the charges of management. If then, this Corporation, *who are charged with taking unreasonable premiums*, have reaped no greater profit, we can hardly expect a more considerable capital to arise from lower premiums, and the hazard of loss will be increased in proportion as the dealing will be more extensive." If these two legal personages could only now behold this great Society, with its eight millions of surplus capital, for the most part accumulated under a lower scale of rates than those originally proposed to be adopted, their surprise would be unbounded! But we now arrive at the second series of objections :—

> 2nd. The Crown has very wisely been always cautious ot incorporating traders, because such bodies will either grow too great, and by overwhelming individuals become monopolies; or else by failing will involve thousands in the ruin attendant upon a corporate bankruptcy. And they continue: As trade seldom requires the aid of such combinations, but thrives better when left open to the free speculation of private men, such measures are only expedient where the the trade is impracticable upon any other than a Joint Stock, as was thought to be the case in the East India, South Sea, Hudson's Bay, Herring Fishery, and in some other Companies erected upon that principle; but there does not appear to be any such necessity in the present case, because the business of insuring lives is carried on, not only by the two great Companies already mentioned, *but such policies are duly underwritten by numbers of private men*, and we think that if the profit were so enormous as the petitioners have endeavoured to represent upon the terms now, and for many years, practised in the City of London, *there would not have been wanting enterprising persons to have reduced the premiums*, and drawn this branch of dealing to themselves, by underselling the market. If the petitioners then are so sure of success, there is an easy method of making the experiment by entering into a voluntary partnership, of which there are several instances in this business of insuring; and if upon such a trial these calculations are found to stand the test of practical experiment, the petitioners will then apply with a much better grace for a charter than they can at present, whilst the scheme is built only upon *speculative calculations*."

This course was acted upon; and we are now brought to the third series of objections, which, though last, we venture to think were by no means least in their significance :—

> 3rd. The Parliament, in erecting the two great Companies already mentioned, have already declared their opinion that such charters ought not to be granted *without some benefit accruing to the public*, and were not sure, when they passed the Act, whether they were not *erecting a nuisance*; to prevent which, a power was reserved to the Crown to abolish the Corporation at any time within the term of 31 years, if they should be found upon trial to be mischievous or inconvenient; and we cannot help observing, that except only in the case of the *Amicable* Society of Serjeant's Inn, and which is formed upon a *very narrow bottom*, the Crown has never of itself, as far as it appeared to us, granted such a charter as the present in any case whatsoever: *and as the two great Companies paid a very large sum to the public for the privileges of their charter*, we cannot advise the Crown to entrench upon their rights on the bare request of any set of men without a clearer and more certain prospect of *public good*."

And so the petition was dismissed, although "C. Pratt" and "C. "Yorke"—the Attorney and Solicitor-General, were fully persuaded that those worthy gentlemen who had made this application were really convinced that the scheme would prove advantageous to the public as well as themselves."

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* These are figures referred to at page 34.

But the promoters were not dismayed. They saw the scheme was practicable, and resolved to carry it out. Starting upon mutual principles, they were better prepared to dispense with Parliamentary powers than Companies requiring large paid-up capital. They drew out the constitution of the Society, in the form of a Deed of Settlement; and four years afterwards, viz., in 1765—Hilary Term, 5 Geo. III.,-this Deed was duly enrolled in the Court of King's Bench. The time which had elapsed had not been misspent. The rates and other features of the Society had been re-considered, and in many instances improved upon. Accordingly the example of rates already given were not those included in the Deed. In some cases a considerable reduction had been made; but here are the amended figures, and beside them, the rates now charged by the Socity at the same ages:—

Age.	To Assure £100 for one year.	At Death.	Present rates for £100 at Death.
8	£1 10 6	£2 4 10	£1 17 7
14	1 11 9	2 7 7	
20	1 15 6	2 15 4	2 3 7
30	2 4 6	3 12 8	2 13 4
40	3 2 0	4 12 2	3 7 11
50	4 4 8	5 18 4	4 10 10
60	6 4 10	8 5 2	6 7 4
67	7 18 1	11 18 8	8 12 1

In each case there was a proviso against hazardous occupation; and for each girl or woman under 50, an addition was to be made to these rates.

We may take it on the authority of Mr. Hendriks, as established, "that no plan of Life Insurance, in its proper form of development as an assured provision of a fixed minimum amount of money payable at death, whenever that may occur,-the risk thus extending from the date of the Insurance being effected, up to the expiration of the whole term of life,-had been contemplated by a Company or Society, or had been considered by any Legislature in Europe, prior to the year 1760, when discussions ensued in England preliminary to the formation of the *Equitable* Society in 1762." But another consideration presents itself. The graduated scale of premiums prepared by Dodson required confirmation, either by corresponding results deduced from distinct data, or by some process of testing the soundness of the Society as it progressed in age and magnitude; for, as Mr. Morgan has well observed, in one of his eloquent addresses, what signify premiums, however correctly computed, "if no means are provided for ascertaining, at proper intervals, the real state of the Institution, and for disposing of its profits without endangering its security, either by a direct or an indirect invasion of its capital?" Happily both these means of confirmation were at hand.

Dr. Price, "an unsuccessful Unitarian preacher, and the contributor of many rare papers to the Philosophical Transactions," had, amongst other things, turned his attention to the subject of Life Contingencies. For a long time he sought, in vain, for data on which to base his inquiries, but at length he found in the registers of the town of Northampton such a record of births and deaths as he considered would form a fair average of such events throughout the kingdom—and from these he constructed the far-famed NORTHAMPTON MORTALITY

TABLES. His book was published in 1780, and for the first time the Life Offices had before them what might *then* be fairly conceived to be a true guide to the expectation and duration of life in this country. But several years before the Northampton Table was completed and published, Dr. Price, who had often been consulted on points of difficulty by the promoters of the *Equitable* Society, had communicated to them two plans to be employed under their existing rates—one for ascertaining at certain periods the amount of the surplus stock; and the other for determining, with a considerable degree of accuracy, the state of the Society's accounts each year; and so admirably were they found to answer these purposes, that they have been continued in use by this Society ever since, and with certain modifications by nearly all the old Societies in the Kingdom. All honor then to the memory of Dr. Price!

It has been frequently said, that the history of the *Equitable* Office is the history of Life Assurance in England. If this be not literally true, it certainly is true that the readiness with which the conductors of this Office have ever listened to and embraced all real improvements, not only led it to the high position which it so speedily attained, but has tended greatly to advance both the theory and practice of Life Assurance in this kingdom. Within one year after the publication of Dr. Price's work, he had prepared for this Society an entirely new set of Tables, embracing upwards of 20,000 calculations. The rates so calculated, although only based upon an assumed improvement of money at 3 per cent. interest, were so far below the premiums before in use, that 15 per cent. was added to them, to prevent too sudden a reduction in the annual income of the Company! In 1782 the new rates were put into practice, and we may, we think properly, mark that year as opening a new era in English Life Assurance: hence we have named this the "transition period"—the transition being from a state of doubt, mistrust, and uncertainty, to a condition of *certainty* based upon scientific truth, and a state of confidence arising from well-merited success.

The effect of the new rates upon the *Equitable* Office was, even after the extra loading to which they had been subjected, to diminish the income some four thousand pounds in the first year. For whereas in the ordinary course of things the income would have been £36,000, it was only £32,000. This brought about some little adjustment, for "to compensate the then members for having previously contributed too much to the Society, an addition was made of 30s. to every £100, in respect of every payment made prior to January, 1782." To show, however, that the new rates did not at all impoverish the funds of the Society, we may note that at the time of the change the whole surplus fund only amounted to £30,000. In 1786 an investigation of the surplus took place, and the 15 per cent. increase to the rates was taken off. In 1789 a further increase was made to the sums assured at the rate of £1 upon each £100 for every annual payment of premium made prior to 1786; and before the close of the century there was another similar addition. Even after this operation, the surplus fund was £110,000; and every person assured previously to 1772, had 30 per cent. added to the original sum mentioned in his policy!

When it came to be seen what large surpluses even the reduced rates of premium would leave in favour of the Offices, it was not much to be wondered at that a number of new Societies should spring into existence, any more than that most of them should be proprietary Companies. A glance at our Chronological Table will show that of the present existing Assurance Offices established during the period of which we are speaking, but three of them (including the *Equitable*) were originally mutual, although another has since become so. The business was seen to be a good one, for, with the then rates of premium, the profits were large. A *Pelican* and an *Eagle* came down to the spoil. Even the great *Globe* began to stir, and *Albion* and *Atlas* came on, with the *Sun* at their heels. From *Westminster* to the *West of England* the mania spread. *London Life* was followed by the *Norwich Union*, and another *Union* was near. The *Provident* well nigh split upon a *Rock;* and the climax of the period was a splendid *Scottish Widows' Fund!* These were days of competition with a vengeance. Two Companies—the *Royal Exchange* and the *London Assurance Corporation*—offer the Government £600,000 for Charters giving them the exclusive right* of insuring ships and merchandize, and actually pay £150,000 each for the privilege. They oppose the application of the *Globe* for a Charter. The *Globe* pleads the necessity of competition, and offers the Government £100,000. The money very nearly carries the point; but unexpected difficulties spring up. The *Amicable* employ counsel to oppose the formation of the "Company of Undertakers," calling them a "Company of upstarts;" the "upstarts" in reply calling the *Amicable* "old and supine." The *Union* Life Office was held forward as being marked by "superior liberality," and having (oh, virtuous Office!) "a decided contempt of the petty advantages which swell the profits of other Offices!" The *Provincial Union* offered to take lives at 10 per cent. under the other offices, while another Company, with "extra superior liberality," would take them at 20 per cent. less! Why then should we complain of the milk-and-water competition of modern times, confined as it is to "new features," and "monster advertisements!"

But in addition to all this competition amongst themselves, the early Assurance Companies had to combat with enemies of another class. The success of some of the Offices had caused them to be a little reckless with their funds, and also a little careless of the persons to whom they granted policies. Evils were thus brought about. To the first cause, perhaps, may be attributed that "insolent attempt," as it has been designated, made by the Government in 1765, to abstract from the Life Offices what was called the "Unclaimed property,"—being in fact their surplus funds. "The peace, concluded in 1763, followed a war which cost upwards of a hundred millions, and the bribery which was necessary to carry the treaty through the House had contributed to exhaust the Treasury. Money was to be acquired, and the people grumbled at the taxation necessary to raise it. *In this dilemma it suddenly occurred to the ministers that there might be unclaimed pro-*

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* This exclusive right was only against other Corporations, and not against individual assurers, who in those days were numerous.

perty in the Assurance Offices, and by some confusion of right and wrong it was thought just to claim this private property for the public good." "Nothing," continues our historian, "could more decidedly approach confiscation. But in dealing with these Offices the Government was dealing with a large and influential body of proprietors, whose gains were aided by this 'dead cash,' and who were not men to see their purses invaded with impunity," and so, happily, the intended blow was averted. To the latter cause—want of caution with whom they did business—perhaps, we may attribute that series of frauds which blot the pages of Assurance History towards the close of the 18th century.

Turning to Mr. Francis' Annals, as we do wherever the "romance" of Life Assurance is to be touched upon, and glancing rapidly over the pages of this period, we find recorded how a man named Innes, having insured the life of his step-daughter in the *Equitable* Office, and having forged a will for the purpose of defrauding the Office, suffered death on the gallows for his crime. How the *London Assurance* Company was defrauded of £2,000 by a clever *substitution of lives.* How an "Eastern lady" obtained several thousand pounds from a London Office, on the sudden death of her husband advanced in years. How some further attempts by the same lady, to "introduce" some other persons to the Life Offices, failed. How, at a later period, a whole batch of Offices were nearly swindled by the designing Thomas Griffith Wainwright — the "Janus Weathercock" of his day —who first heavily assured, and then destroyed the life of the beautiful Helen Abercrombie. How an equally consummate, if less guilty, scoundrel three times passed off his daughter, or, as most thought, his mistress, as *dead*, and each time obtained large sums of the Assurance Offices! These, and many other occurrences, prove that the best of Institutions may be applied to the worst of purposes. The "Rugeley poisoning cases," and the "Joddrell policies," are amongst the more recent instances in this direction. We now pass on to the next period.

CHAPTER V.

THIRD PERIOD—1816 TO 1844.

"THE GOLDEN AGE OF ASSURANCE COMPANIES."

To speak of this as the Golden Age of Assurance Companies may seem to disparage those Societies established at earlier dates. Our intention is not to do this. Indeed, those early Companies which are still existing, speak for themselves; they have all attained high positions, despite the difficulties they had to encounter, and the doubt which, for a time, surrounded them. Of those still earlier Societies, which have, happily, long since passed away, Dr. Price truly said that to call them impositions on the public, proceeding from ignorance, and supported by credulity and folly, was "too gentle a censure." But we shall be fully able to justify our position by a review of the advantages the Companies of this period possessed over those which preceded them.

These advantages may be ranged under several heads. First, and chiefly, the more accurate data which scientific investigation had placed at their disposal. Next, the rapid improvement which had been made, and was still taking place in the mortality of the kingdom. Third, the legislative encouragement which had then been newly bestowed upon Life Assurance. And, lastly, as arising out of all these, the improved public feeling which had set in in favour of such Companies.

Reviewing these in their reversed order: Assurance Companies had no longer to battle with unnecessary parliamentary difficulties, or to offer bribes of such an amount as to well nigh ruin them at their outset. An enlightened administration had seen the propriety of encouraging and multiplying provident associations; and a Prime Minister strengthened his position in the eyes of a mercantile nation, by announcing from his place in the House of Commons, his intention of exempting from Income Tax a portion of the income of those who had "recourse to that *easy*, *certain, and advantageous mode of providing for their families by assuring their lives*"—that portion being the amount which they invested in this manner. That the effect of this exemption was highly beneficial to the Offices of that period we have abundant proof; and although it has been more recently revived in a modified form, we should not forget that we were originally indebted for it to that wise and great statesman, William Pitt, and that, too, at a period when Life Assurance, far more than now, required to be rendered popular.

With respect to the improvement in the mortality of the kingdom, the facts are so surprising as to appear almost incredible if they had been presented by any less authority than that upon which we have them. The late Dr. Griffith Davies found by "labourious investigation" the same number of persons which, in the early part of the 18th century, produced 106 deaths, would, at the commencement of the present century, furnish only sixty-six deaths, and from 1815 to 1820 only sixty-two; hence the mortality had been reduced two-fifths during the space of one century. The entire Table with the diminution at various intermediate periods, will be given in our remarks upon Longevity. The effects of this improvement in mortality, so far as Life Offices were concerned, are so apparent as to need no further comment here. An improvement is still going on, although not so marked as at the period of which we are speaking; but this will be more fully gone into in our next division. There can be no doubt that to this favourable feature the large surpluses of some of the older Offices is, to some extent, traceable. To it we certainly owe the more equitable rates of some of the modern Offices.

But by far the most important element in originating the sound Companies of this period was the improved scientific information they could command. Mortality observations were no longer confined to the London Bills of Mortality, at a period when they were known to be unusually high, or to the records of the town of Northampton, which had been dealt with as arising from a fixed population, whereas it afterwards turned out to be a progressive or increasing one. A much more extended range of observation had been taken. Not only had Norwich, Warrington, Holy Cross, and Chester furnished confirmatory results to those derived from London and Northampton, but a series of observations taken on the continent had been communicated to this country. Dr. Newmann had recorded the births and burials in the city of Breslau, up to the close of the 17th century, and Dr. Halley's Breslau Table of Mortality, constructed therefrom, had now come to be known. M. Kersseboom had investigated the register of assignable annuities in Holland, for a period of 125 years before 1748, and drawn valuable conclusions therefrom. De Parcieux had examined the lists of the Tontine schemes in France and the Necrologies of the Religious Houses, and constructed a Mortality Table, differing but slightly from the later results obtained in this country. Dr. Wargentin had condensed the results of seven enumerations of the entire population of Sweden into a practical form. The mortality of Vienna, Berlin, Brandenburgh, and the Canton de Vaud, Switzerland, had been subjected to a like scrutiny; and to complete the enumeration, Mr. Joshua Milne had constructed from the observations of Dr. Heysham, upon the Mortality of Carlisle, that valuable Table which is now known throughout the world as the CARLISLE TABLE OF MORTALITY. The publication of this latter took place in 1816; from this, no less than from the completion of the Northampton Table, may a new era in the Assurance world be dated.

It is not our intention here to explain the essential merits or defects of the several Mortality Tables we have enumerated; we shall have a special division for that purpose hereafter. But we have two points to notice as bearing upon the progress of Life Assurance. First, the remarkable similarity of results derived from these several sources—a similarity sufficient to remove all doubts even from the most sceptical; and, next, the favourable mortality shewn by the Carlisle Table, and confirmed by many of those just quoted, which enabled the Offices, taking this Table for their basis, to charge, at all the vounger ages of life, a much less rate of premium than that demanded by the older Offices, and thus, by reasonably cheapening, tending to extend Life Assurance. On ages below 40, the difference in the "expected" duration of human life between the Northampton and Carlisle Tables ranged from 6 to 10 years in favour of the latter; while, with ages from 40 to 80, the difference ranges from 4 years down to 1 at the extreme ages.

Another favourable circumstance also assisted. The great success which had attended the *Equitable* Society up to this period had done much to popularise Life Assurance. Enormous "Bonuses," even although one knows he has to pay for them, are always attractive! But the *Equitable* had done so much business that it became careless about doing any more, and by 1816, its doors were in effect nearly closed to new comers. There was an evident fear either that the Office would become unmanageable if many more new members were admitted, or of selfishness on the part of those already assured that they would obtain too small a share in the surplus by its being divided amongst such large numbers. Hence, about the time we are speaking of, a resolution was come to, to confine the participation in the surplus to the 5,000 oldest existing policy-holders for the time being. Perhaps this decision was fortunate; for it was better that the check should come voluntary than by the force of circumstances. With increasing numbers the rates of bonus must have been very considerably reduced, or the stability of the Society endangered.*

We have been particular in enumerating the advantages which were enjoyed by the Offices, originated at this period, not for the purpose of bringing them conspiciously into note, any more than their general soundness, good management, and success will always claim for them, but rather that such advantages should be remembered before any invidious comparisons be drawn as against Offices which have had to encounter greater difficulties, or were too early or too late to participate in those on the like advantages. Never, perhaps, were there more great minds devoted to the investigation and perfection of a science, at any one period, than to the science of life probabilities at the period, or immediately prior to the period, just passed in review.

"We have had in England," remarks Mr. Samuel Brown, "Boyes, Simpson, De Moivre, Halley, Stirling, &c.; but we have carried out the practice in Life Assurance to a degree which, considering the short period elapsed, astonishes by the grandeur of the interests involved, and the vast amount of benefit which it has conferred upon

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* *Vide* Mr. Morgan's addresses to the Court of the *Equitable* Society.

Society." In 1830 appeared a *Treatise on Probability*, in the Library of Useful Knowledge, by Messrs. Lubbock and Drinkwater, being the first attempt to make the subject popular to the great mass of the people; and, in 1838 Professor De Morgan, in his admirable *Essay on Probabilities, and on their application to Life Contingencies and Insurance Offices*, brought within the reach of the mere arithmetician the rules, which, if their demonstration must first be studied in the pages of Laplace. would be confined to Mathematicians of the highest order. The student who wishes to consult the higher branches of the subject in English may study with advantage the article on the "Theory of Probabilities," also by Professor de Morgan, in the *Encyclopædia Metropolitana*, in which the substance of Laplace's great work is briefly given; and a treatise on the same subject by Mr. Galloway, published originally in the *Encyclopædia Britannica*, and afterwards, in 1839, in a separate volume, which contains a summary of the reasonings of Laplace, Condorcet, and Poisson. "Great," adds Mr. Brown, "as has been the progress already made, the application of the theory is still only in its infancy in this country.[*]

On looking over the list of Offices of this period the reader will not fail to be struck with the large proportion bearing the designation of "Mixed," as distinguishing them from the purely *Proprietary*, or the *Mutual*. Without here entering upon the merits of these several systems—although we intend doing so very fully in another place—we simply call attention to the fact. Many of these Offices, indeed, started *Proprietary*, but they have since, with one or two exceptions only, all become either *Mixed* or *Mutual*. At the present time the proportion amongst the English Offices generally, is *Five* mixed to one mutual Office; and many which call themselves mutual are, in reality, founded on the *mixed* principle.

It is not to be supposed that the chronological list appended to this chapter contains anything like the number of Offices that were started in the period of which we are speaking. Even in the "Golden Age", Companies sprang up like gnats on a summer's evening, and disappeared as suddenly. From 1806 to 1826, we are told, more Companies had been broken up than had been successful. Some went down in total insolvency; others lost a large portion of their capital; another set of directors paid the *Provident* £21,000 to take their risks off their hands. Where is the *Rainbow* or the *Philanthropic?* the *Hercules*[*] or the *St. James's?* the *St. Patrick* and the *Shamrock?* Echo answers "*Where?*" Yet these were all veritable Assurance Offices in the days of yore. Jealousy was as rife in those days as now, and there was a strong feeling against the new Offices. The *Alliance* started in 1825, and having a *Marine* Assurance Branch, was a great source of annoyance to the Companies who had, at an enormous outlay, charters with exclusive rights. But the Office was *respectably* and *economically* managed, and it has succeeded. With *these* conditions there is still a fair chance for all; and we most entirely agree with a popular writer upon the subject, that "the old Companies have nothing to fear from the increase of fairly constituted rivals." What they have to fear, and what all who are interested in the progress of Life Assurance have to fear, and mourn at, is the constant establishment of Companies holding forward delusive principles, or having no higher aim than to provide handsome incomes for pretentious Managers, and needy Directors—men who neither deserve success nor know the means of securing it. This appropriately enough brings us to the next section of our subject.

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[*] Assurance Magazine, vol. vi. p 147.

[*] A new *Hercules* was founded in 1863. We wish it a better fate than its predecessors.—*Note 1866.*

CHAPTER VI.

FOURTH PERIOD—1844 TO 1862.

"BUBBLE COMPANIES."

THE period we have just passed over did much to popularize the practice of Life Assurance in this country. The speculative Companies of a former period had passed out of memory. The principles of the existing Offices were fast becoming consolidated; and the Companies themselves recognised as amongst the most valued monetary Institutions of the country. The magnitude of their transactions was only equalled or surpassed by those kindred Institutions, Banks; and the promptitude with which they met their engagements deservedly placed them high in public confidence. It was not to be supposed that such a state of things could long continue without a "dark side." Those who know most of human nature know, and deplore, that the best of Institutions are the most liable to abuse. This has been proved more than once in the History of Life Assurance. The favorable results which had been achieved by sound management of the old Offices—more particularly the bonuses of the *Equitable*—which public rumour had extended even beyond their almost fabulous reality, had, coupled with a want of popular and correct knowledge of the principles and practice of Life Assurance, raised public expectation to a high pitch. To this circumstance, combined with the unlimited confidence before referred to, must we look for a solution of that blind reliance which was placed in many of the swindling schemes which were brought forward in the earlier years of the period we are entering on, and in the numerous abortive projects whose concoctors, after exhausting the large funds placed at their disposal, have left their dupes to ascertain the extent of their remaining liabilities, through communications made to them by the Vice-Chancellor's officials.

Our exposition would be incomplete if we were not to go back to the great *West Middlesex* swindle, which may be regarded as the precursor of those we are about to speak of. It was originated in 1836, by two scoundrels, one of whom had been a journeyman shoemaker and a smuggler, and the other, William Hole, had been a tallow-chandler and a bankrupt. These two men contrived to draw from the public no less than £200,000 or £250,000, by the sale of *Annuities* at some *thirty* per cent. more favorable terms than any other existing Office could afford to offer, and by granting Life Assurances at similar reductions from the ordinary rates. Handsome Offices were opened in London, Edinburgh, Dublin, and Glasgow, and the newspapers of the day teemed with their advertisments. Money came in from all quarters: but chiefly from those who should have been better informed, viz.: clergymen, half-pay officers, and people in the more genteel ranks of society. These are the classes who most suffer by such schemes. The man of business is too wary to be caught by such transparencies.

If the disappointment and ruin which this one fraudulent scheme occasioned could be truly depicted, there is nothing in the realms of fiction which could equal it.

There was *then* no periodical specially devoted to the exposure of such schemes, and their promoters;—and we may add, happily, none to bolster them up, and thus aid and abet in the disgraceful work. It is true Mr. Peter Mackenzie, the editor of the *Scottish Reformer's Gazette*, published in Glasgow, did take great pains to expose this scheme, and must have incurred considerable outlay in defending the several actions which were brought against him; but he was too far from his work, and it was only when he had induced Sir Peter Laurie to commence an exposure in London, that the bubble really burst. But the evil, to the extent indicated, had already been accomplished.

How many similar schemes might have followed, and what mischief those which *did* follow might have done, but for an event which is closely allied with the Insurance history of this period,we, of course, have no means of knowing. Vast as the Insurance interest had at this time become, it had no special organ devoted to it, or to watch over its progress. The public interest, although great, was hardly of a character to commend it to the newspapers; and they (the newspapers) were hardly in a position to do the work well, for it required almost individual attention. About the year 1840, however, this defect was remedied by the establishment of the POST MAGAZINE, a small weekly publication issued at the low price of one penny. Prior to the appearance of that little periodical, Life Assurance had not been regarded by the press of this country as a suitable topic for public discussion; and, probably, not one individual in twenty had any very accurate notion of what was meant by a Life Assurance Institution.

Those who have the advantage of being personally .acquainted with Mr. J. Hooper Hartnoll, the originator, proprietor, and editor of that Magazine, knows how distasteful any personal adulation (even in these pages, which owe so much of any merit they may possess to his sound critical judgment) would be to him. He is of those *silent workers* to whom the world owes so much, *and goes on owing it!* But even this circumstance must not prevent us from completing our historic outline. The "special services" which called that Magazine into fuller action, after the passing of the Act, 1844, happily now only exist in a limited degree; and many of its present readers only know by hearsay of its dauntless efforts some 18 or 20 years ago, in attacking parties who had combined for purposes of fraud, and given to their infamous projects the alluring title of Assurance Associations. Week after week, and year after year, it exposed schemes scarcely less daring than those of the "West Middlesex;"—schemes only rendered less successful by reason of early exposure. Actions were brought against the editor, but he kept his ground, and never flinched from his task until he had unearthed the whole nest of insurance swindlers of that period. A condensed history of some of these schemes was subsequently furnished in Mr. Hartnoll's letter to the then President of the Board of Trade, the Right Hon. E. Cardwell, published in 1853.

As we shall probably have, in another division of this work, to refer more in detail to some of the "bubble schemes" of this period, we will only here stop to record the names of the principal of them, and then proceed with our narrative. The *Sea, Fire, Life* deserves, in every respect, to rank next to the *West Middlesex.* The *Merchant Traders*, the *Port of London*, and the *General Commission* Offices, concocted by the same parties, relate more particularly to Marine Insurances—and pretty well they took in the *Marines!* The *London Marine Brokers* had a Life branch, and issued *Indisputable* policies! Then came the *Reciprocal* Life Office, which in all that was *bad*, reciprocated most entirely with those just named! This was followed by the *Hope Reversionary and Life*, the *Annual Bonus*, (fit offspring of the *Counties Union*,) and the *Family and Commercial* Life Offices; the last of this batch being the *European Full Pay Alliance Insurance Company*, and the *Independent* Assurance Company, long since wound up in Chancery.

The circumstances attending the "West Middlesex swindle," at length drew the attention of the Legislature to the subject;—in like manner as the prevalence of gambling assurances, and the evil consequences resulting therefrom, had led to legislative measures a century before. Accordingly, towards the close of 1844, an act was passed imposing certain restrictions upon all Insurance and other Joint-Stock Companies thereafter to be founded. But while the Act against gambling assurances *did* ultimately lead to their discontinuance, the Act for the regulation of "Joint-Stock Companies" did *not*, so far as Insurance Companies were concerned, succeed in its purpose, but had rather a contrary tendency, as the continued exposure in the *Post Magazine* of schemes concocted under protection of the Act, abundantly established.

In 1845, the first year after the passing of the first Joint-Stock Companies' Act there were no less than forty-eight Life Assurance Companies provisionally registered. Of this number twenty-one only, or less than one-half, became completely registered; and of these but four are now in existence! An able writer of that period drew the following comparison:—"Fertile as the year 1845 has been in railway projects, the majority of which, like the Jew pedler's razors, were made for sale and not for use, it has been no less so in new assurance offices." He remarks that the evils from railway speculation may be only temporary; but "not so transient or temporary is the evil that will arise from these new assurance offices if they are not based upon sound principles and prudently conducted." He adds "a scheme of this kind is concocted no less easily than a railroad; its birth-place being in like manner the solicitor's office, and its object the especial benefit of the firm, and its friend the secretary—or as is now the more favourite term the *Managing Director!*"[*] and this is unfortunately too true, in many instances, even yet. Mr. Pateman, the late publisher of the *Post Magazine*; who, by virtue of his office, had been brought into frequent contact with the promoters of Insurance Companies, ascertained the following particulars regarding the "promoters" of the seventy Life and Fire Offices registered in 1852. Of gentlemen there were thirty, and of esquires ten; of merchants ten, and of actuaries and secretaries twelve; of barristers six; of solicitors eight; of surgeons and warehousemen three each. There was an author and a shoe manufacturer; a doctor of divinity and a grocer; an artist and an M.P.; a civil engineer and a baronet; a bullion merchant, and the manager of a Life Office; an architect and a Life Assurance agent; a calico printer and a marble merchant; a cabinet-maker and a manufacturer; a printer and a farmer and grazier; an iron merchant, and a provision merchant; a sharebroker, and a publisher; a naval pensioner and a shipowner; a builder, and a lieutenant-colonel!

It was not alone from the projection of schemes, by persons wholly unacquainted with the principles of Life Assurance and the practice of the Offices, that discredit was brought upon this class of Institutions. The facility with which Companies could be formed under the Act of 1844, and Managerships obtained, offered irresistible temptation to certain ambitious clerks in Insurance Offices, to endeavour to become Secretaries, or Managers, "before their time." Accordingly, we find a person who had graduated as a kind of half-clerk, half-messenger in a respectable Office, instituted in 1839, passing from that employment to the Managership of an Office which he had assisted to establish in 1841;—quitting the latter Office, under circumstances we are not acquainted with. and establishing a new Company (1848), of which he stood in the triple capacity of Promoter, Actuary, and Secretary;—again on the move in 1852, and forming a new Company, which only lasted sufficiently long to occasion a heavy loss to the deluded shareholders;—and finally, becoming Manager of a Company instituted in 1854, and winding-up in Chancery in 1857.

We abstain from giving the names of the Companies; but with respect to the Collingridge[†] lot, there is no necessity for any such reserve. Out of the *Merchant Traders'* (1845), sprang the *General Commission* (1846), from which arose the *Port of London* (1847), which gave birth to the *Sea, Fire, Life* (1849);—and the POST MAGAZINE, happily for Society, smothered them all. Sometimes projectors run in couples. For example, the *Sea, Fire, Life* (1849), having been sold up (1850), the Actuary, and one of the clerks in the Office, instituted a new Company (1850), which, becoming ashamed of its name, was converted into another new Company in the same year; and this latter Company has since lost its identity by amalgamation. The happy pair, however, soon separated; and the Actuary formed a Company on his own account (1851). Speedily retiring from the Managership, with a bonus, he formed another Company in the same year (1851);—retired from the Secretaryship with a like bonus, at the end of two or three months; and has since filled up his time by giving professional advice to Companies that are poorly. The clerk, who had noviciated in a Company established in 1847, and passed through the aforesaid professorships, also set about establishing a Company on his own account, 1851. In the following year (1852) he formed a second Company; and both have now entered into the bonds of matrimony with a Company formed in 1856; receiving into the family an orphan, born in 1854. We might also refer to the fecundity of a Company established in 1848; whose seceding Actuary established two Companies in 1850, a third in 1852, and a fourth in 1853. The Warwick of Company-makers, however, is the gentleman who established a Company in 1838;—quitted the managership in order to form a new Company in 1839;—continued quiet for three years; but started another Company in 1842;—another in 1843;—another in 1847;—and another in 1854. Out of these Companies arose three others in 1851 and 1852. Here is a progeny of *nine* offices springing directly from one parentage; and if we were to stop to trace more indirect influences this number would probably be nearly doubled! The genealogy of six other Companies was given in the POST MAGAZINE, January, 5, 1856;—a rev. gentleman now on his travels, and an ex-clerk from an Office in Cheapside, being the unhappy heads of the family.

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[*] *Life Assurance Offices, New and Speculative*, published 1848.

[†] *In no way connected with the widely-respected proprietor of the City Press.—Note, 1866.*

Notwithstanding the exposure of such schemes in the pages of the periodical before referred to, still many of them contrived to obtain large sums of money, and still more will be required from the sufferers on their winding-up—for the greater part of them have arrived at that process. The loss, of course, falls either on the shareholders or the insurers: for the most part, and very properly, on the former. In all cases, the assurers suffer by missing the advantages they might receive, for the same outlay of premium, in better-constituted Companies. In several, the loss has been more direct, by the policies remaining unpaid, as with the *Independent*, the *Tontine*, the *Counties' Union*, the *Sea*, *Fire*, *Life*, the *Reciprocal*, and some others. In the cases of the *Oak* and *Security*, mutual Offices, the *assurers* have been held liable for the debts of the Societies.

The following Offices,[*] chiefly of this period, are now winding-up in the Court of Chancery:—

Agriculturist.
Amazon.
Athenæum.
Birbeck.
British Exchequer.
British Provident.
Caxton.
Commercial&General
Consols.
Cosmopolitan.
Defender.
Deposit and General.
English&IrishChurch.
Era. [Need.
Financial Friend-in-
General Indemnity.
Herald.
Home Counties.
Hull and London.
Justice.
Life Assur. Treasury.
London and County.
London Mercantile.
Lond. & Westminster.
Merchant Traders.
Mitre.
National Alliance.
NationalAssur.Invest.
Oak.
Observer.
Parental Endowment.
Phœnix.
Professional.
Protestant.
Public.
Saxon.
Sea, Fire, Life.
Security.
Times.
Universal Provident.
Waterloo.

The majority of the unsuccessful Offices transfer their business, and wind-up by mutual arrangement. At the close of this Chapter, a list of the Offices which have done so, and indeed a list of all those which have discontinued business since the passing of the Joint Stock Companies, Act, is given. The list numbers some 120 Offices, and we fear is still incomplete. The causes of the failure of so many Offices may be classified under a very few heads: 1. Want of *bona fide* intentions at starting. 2. Want of practical experience on the part of the promoters. 3. Extravagant and unsound management.

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[*] These Offices appear again in our list of defunct Companies. Some of them had, at the time of suspending operations, a business of sufficient magnitude to be transferred to other Offices. Where this has been done, the fact will be stated in the list.

It is far from our intention to imply that *all* the Offices of this period come under the denomination of "bubble Companies." We by no means join in the cry against the new Offices, except so far as the reckless proceedings of many of them have exposed them to censure. It is as unjust to believe all the new Companies to be bad, as it is foolish to believe them all to be good, in the face of the flagrant disclosures to the contrary. We can point to some of the Offices of this period as achieving success—all circumstances taken into account—which has never been surpassed; and there are other Offices that have established a respectable business at a very small cost. We refrain from giving names; as it is not our object to flatter particular Companies, at the expense of others which are possibly destined to become equally successful. The elements of sound management and economy are undoubtedly required, in order to secure success for an Assurance Office. But are they not equally necessary in any other mercantile undertaking? The funds of an Assurance Society are only the more sacred because they are held in trust for the benefit of widows and children; and he who would wilfully squander them should be held a criminal, and a traitor to his species! Nor should we forget the dictum of Mr. Finlaison, late Government Actuary, the truth of which all who are practically conversant with Insurance history, must admit, "that thousands and thousands are brought to insure their lives by the agency of young Offices, who otherwise never would have heard of Life Assurance at all, and never would have come at all."*

It may be desirable—in order to avoid injustice to those that are respectable—to give some definition of "Bubble Companies," and we cannot improve upon that furnished by the Parliamentary Committee on Joint-Stock Companies, which sat in 1844. They classified them under three heads:—

1st. Those which, being faulty in their nature, inasmuch as they are founded on unsound calculations, *cannot succeed by any possibility.*

2nd. Those which, let their objects be good or bad, are so ill constituted as to render it *probable* that the miscarriages or failures incident to mismanagement will attend them; and

3rd. Those which are faulty, or fraudulent in their object, being started for no other purpose than to create shares for the purpose of jobbing in them, or to create, under pretence of carrying on a legitimate business, the opportunity and means of raising funds, to be shared by the adventurers who start the Company.

In the first class may be comprised those Offices which are continually springing up, offering "advantages" totally incompatible with the rates of premium charged: advantages which Offices with their *accumulated millions* would not dare to offer, because they would know they could not perform them!

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* Examination before Select Parliamentary Committee, 1853

The second is, perhaps, a still more numerous class. Indeed it is not too much to say, that at least *one half* of the Offices included in our list of defunct Companies *might have succeeded under proper management:* that is to say, that if, instead of a course of disgraceful profusion, as evinced in elaborate offices, an extensive staff of officers, and liveried messengers, they had commenced, as did the old *Equitable*, the *Scottish Widows' Fund*, or the *Mutual*, with the fund for management expenses provided out of the Directors' pockets, and every step had been taken with due regard to the expenditure the Office could properly afford. Offices *so* managed have a vitality which no competition can destroy, and achieve successes which in after years are looked upon as little short of fabulous.

To the third class, happily, a check has been interposed; not, indeed, by legislative measures; for these, from their incompleteness, have rather opened up fresh facilities; but as we have seen, by the enterprise of individuals actuated by a desire for the public good. An instance of the manner in which these schemes have been, and for aught we know may yet again be, brought before a "deluded public," may be productive of good, and is strictly illustrative of the period we are now upon.

The Company we select shall be the *London Marine Brokers*, which endeavored to secure public confidence by opening an account; or, at all events, by announcing as its bankers, the Royal British Bank! and by registering a list of forty shareholders, purporting to hold some 1,000 or 1,200 shares in the concern. Our authority is the report of the Parliamentary Committee on Assurance Associations in 1853: *their* authority the POST MAGAZINE. No. 1, the promoter of the Company, J. N. Burnand, held 20 shares; No. 2, Joseph Williams, a coffee broker, 50 shares; but *he* declared he had never heard of the Company, and knew nothing about any shares; No. 3 was Richard Hopkins whose address turned out to be a public house, and the landlady declared she had occupied the place for nineteen years, and no such person had ever lived there! Robert Richardson was put down for 20 shares, and his address. Oxford Market, but no such person could be found. William Joyce, who figured for 30 shares, upon enquiry was also *non est.* The same of Henry Somerset and his 10 shares. Henry Bladon Savory, who stood for 50 shares, was found; his wife was a char-woman, at "26, Hunter-street, Brunswick-square." Savory was described in the Share-list as an *accountant;* whereas his real occupation was that of porter to the Company, at their Office, Royal Exchange Buildings! All those, indeed, who turned up at all, turned up bad. One who was reputed to have signed his name for 40 shares, was found only capable of "making his mark." Another had been employed to "get names" to powers of attorney for the Company. A third had signed for shares "because others did so;"

and the last absolutely signed for a "pot of beer." Surely a case has been made out in support of our title of "Bubble Companies!"

It is a fortunate event that such a large proportion of the new Offices have so early ceased to exist; for if many of them had continued longer, and pursued the same course of management, the evil would have been very much greater. The penalty of unsound management is, that it produces its own remedy: for public confidence is shaken, and the scheme falls to the ground—the assured it is to be hoped, gaining wisdom, and seeking in future more solid establishments. The average duration of the Offices included in our "discontinued" list would probably not exceed one year. Every year the public is becoming more cautious, and therefore the chances of the bubble Companies so much the less. There are fewer unsound Companies now existing than there were ten years since. The worst have passed away, and new ones have not lasted long enough to take their place. See what the last few years have done. Where is the *Deposit and General*, the *Protestant*, the *United Life and Guarantee*, and the *Oak?* The *Athenæum*, the *Hope*, the *Amazon*, the *Beacon*, the *Universal Provident*, and the *London and County*, no longer disgrace the list. Every year clears off a few more of the unsuccessful occupants. It was owing to this gradual process of absorption that the public was disappointed at the result of the enquiry by a Select Committee on Assurance Associations, in 1853, as indeed was the Committee itself:—

> "With regard to the *general condition* of existing Companies, *so far as any evidence has been laid before your Committee*, they feel it their duty to report that it is *more satisfactory than they had been led to believe before they entered upon the enquiry.*" "No doubt," continues the report, "instances of great abuses and flagrant frauds have been disclosed by the witnesses examined; but in general these consisted of an open violation of all law, more akin to swindling than to regular trade, and such as it would be difficult for any Legislature to prevent, *so long as private persons exercise so little precaution in the conduct of their own affairs.*"

This rebuke is wisely administered. Now a word on the general state of the Insurance Law.

> "But while the Committee are enabled to speak in these satisfactory terms of existing Offices, *so far as the evidence has gone*, their attention has been called to the great facilities which exist under the present state of the law, for Insurance Companies, in common with others, being brought into existence with no reasonable prospect of, or guarantee for, success; *and not unfrequently* without any *bona fide intention of transacting business.*"

One other point, bearing directly upon the Insurance history of this period, is the establishment, some twenty years since, of the *Institute of Actuaries*, with a view of improving the status of that profession, and more particularly for the purpose of affording its younger members the opportunity and the inducement to become thoroughly proficient in the varied branches of knowledge required by Actuaries and Managers of Assurance Offices. The *Assurance Magazine*, the organ of the Institute, affords an impartial medium for the discussion of scientific questions; many of the papers read before the Institute, and afterwards printed in its pages, are of great practical and historic value; and it is not too much to expect, that the next generation of offices and assurers will reap the benefit of this step.

The following Tables, shewing the number of *Life* Assurance Companies which have been provisionally registered since the Joint-Stock Company's Act came into operation in September, 1844—the number of them which have obtained complete registration, and, again, the number of these latter which are in existence at the present time, will form an appropriate conclusion to our remarks on "bubble Companies."

Date.	Mutual Assurance Companies provisionally registered.	Mutual Assurance Companies completely registered.	Assurance Companies other than Mutual provisionally registered.	Assurance Companies other than Mutual completely registered.	Total Assurance Companies provisionally registered.	Total Assurance Companies completely registered.	Number existing end of 1866.
1844 ...	*nil.*	*nil.*	4	1	4	1	0
1845 ...	6	4	42	17	48	21	1
1846 ...	4	3	20	8	24	11	2
1847 ...	2	2	24	13	26	11	1
1848 ...	6	5	17	10	23	11	2
1849 ...	9	4	31	14	40	11	0
1850 ...	3	1	25	10	28	18	1
1851 ...	7	6	30	12	37	11	1
1852 ...	12	2	44	15	56	17	3
1853*...	0	0	0	0	30	10	3
1854*...	0	0	0	0	51	36	4
1855*...	0	0	0	0	40	19	3
1856*...	0	0	0	0	19	8	0
1857*...	0	0	0	0	5	2	1
1858*...	0	0	0	0	9	4	0
1859*...	0	0	0	0	5	5	0
1860*...	0	0	0	0	5	3	1
1861*...	0	0	0	0	11	4	1
1862*...	0	0	0	0	9	5	3
1863*...	0	0	0	0	12	8	2
1864*...	0	0	0	0	9	8	4
1865*...	0	0	0	0	15	9	6
1866*...	0	0	0	0	13	10	5
	27	27	237	100	519	258	44

During the same period several Life Offices have been founded with Deeds of Settlement; and several other offices transacting Life business are registered under the Friendly Society's Acts.

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* In consequence of the *Mutual* Offices not being distinguished in the Registrar's Returns, we have been unable to maintain the above distinctions during these years.

CHAPTER VII.

FIFTH PERIOD.—1862 TO PRESENT TIME.

"LIMITED LIABILITY" COMPANIES.

During the whole of the preceding period, 1844 to 1862, the law relating to Joint-Stock enterprise was in a very unsettled condition, and especially so as regarded Insurance Companies. The object of the legislation of that period was to develope the principle of "Limited Liability;" but Insurance Companies were intentionally excluded from the operation of that principle. It was contemplated to legislate for them specially, as Joint-Stock Banks had been specially legislated for.

In the session of 1856, Mr. Wilson (of "Economist" celebrity) the then Secretary of the Treasury, introduced a Bill to Parliament, with a view to the improvement of the law regarding Insurance Companies; but partly from being considered incomplete, and partly, we believe, from the opposition of the older offices, it was withdrawn in an early stage. One of the provisions of that Bill was that the registration and publication of accounts should apply to *all then existing*, as well as to all future companies. It may be regarded as a misfortune that these requirements have not become law.

It so happened, probably in view of the contemplated special legislation referred to, that in July, 1856, the provisions of the Joint-Stock Company's Act of 1844, so far as they related to Insurance Companies, became suspended. This state of things was rectified by a short act passed in August, 1857. The returns of Companies established during the close of 1856 and the first eight months of 1857, are consequently more or less defective.

Matters went on under the restored law of 1844 until the Parliamentary Session of 1862, when, the principle of Limited Liability having grown greatly into favour, a large and comprehensive measure was introduced, which was intended to supersede all previous Joint-Stock legislation, and consolidate it for the future. This measure became law, and came into operation on the second day of November of that year. Its title is "The Companies Act, 1862," and stands in the statute book as 25 and 26 Vic., c. 89. It contains no less than 212 sections, and no inconsiderable portion of its provisions relate to the "winding up" of Companies.

We regard 1862, therefore, as a new era in assurance history.

The blessings of Limited Liability, such as they may be, were then, for the first time, extended to Insurance Companies of all descriptions thereafter to be founded; and we believe the change was a prudent one.

The Companies hitherto founded under the new law have not been numerous. This may arise from attention having been called to a variety of other channels of enterprise. Those which have been founded bear the impress of respectability. They do not rank as mere conceptions, but have the stamp of *bona fide* intentions. Copies of the accounts of these Companies have to be filed at the office of the Registrar of Joint-Stock Companies (Sergeant's Inn, Fleet Street), within fourteen days after the holding of their annual meetings. The articles of association under which they are governed, and all subsequent alterations to the same, and also a list of shareholders, corrected from time to time, have also to be registered at the same place, and can be referred to by any body on his paying the small fee of sixpence. Policy-holders in these Companies will now have the means of knowing something of the true state of matters, and the public press is very much on the alert.

The real advantage of the Limited Liability law appears to us to be—apart from the technical advantages just enumerated—that really responsible persons may become shareholders without undue risk. A shareholder may limit his loss, if things go wrong, to *one hundred, one thousand*, or *ten thousand pounds*, according to his means, but he need not be ruined. Under the old law of unlimited liability, shareholders in Insurance Companies (and until lately also in Banks) stood to lose all they had, and good men were accordingly shy. Insurance projects therefore too often fell in the hands of reckless men who had no capital to lose, and so the loss really fell upon the policy holders.

But there is still the other side to the question. Inasmuch as the loss to the shareholders is limited to their aggregate holding in shares, the security of the policy holders is limited to a like extent in the event of matters going wrong. Therefore the character and management of the office become matters of vital importance. The law provides both to agents and policy holders, the means of knowing the financial position and also the constitution of these modern companies: prudence must do the rest.

Taking a general retrospective glance at our subject, it is noticeable that some periods in Assurance history seem to have been far more congenial to the growth of good Offices than other periods, oftentimes, not very far remote. 1806 furnishes us with our first example. The offspring of that year were both numerous and strong. 1823 gives a still more notable example. 1824 has much to be proud of; while 1825 produced some of the best Companies of the "golden age." Taking a leap of ten years, 1835 placed two champions on the list; and 1836 furnished a series of sound offices. This picture has its converse. Some periods in Assurance chronology seem to have been beset with difficulties. See the melancholy list of "defunct Companies" to be presently given. We have not the means of carrying it as far back as we could wish, but it goes far enough to prove our present case. In 1839 the "epidemic" shows itself. Of some ten or a dozen Offices ushered into the world that year but one survives to tell the tale. Of the various Offices of 1841 and 1842, but one is still remaining. 1845 produced a weak and puny offspring, of which the greater part have long since departed this life." 1849 was the era of "Assurance swindles," but, happily, they have all died out—not one survives to mark the period. 1850 involved many of the unsound Companies in ruinous losses; and from that period down to the present time, the Court of Chancery, and the Bankruptcy Court, have had constant employment in "winding up" Assurance schemes and their promoters, while members of the "legal profession," and "auctioneers," have also made some rich harvests in the misfortunes of a portion of the *not always* "discerning public!"

The following Tables elucidate the foregoing chapters: they are revised down to June, 1867, and, taken together, furnish a more complete list than we believe has been hitherto published.

CHRONOLOGICAL TABLE

Of the Establishment of all the *existing* LIFE OFFICES, together with a statement of the principles upon which they were, and are founded; the business they transact, and their legal powers; divided into several periods corresponding to the divisions of the foregoing chapters.

FIRST PERIOD.

Est.	Present and Original Names of Offices.	Principles.	Nature of Business.	Powers under which they act.
1721	*Royal Exchange*	Mixed ...	Life and Fire	Incorporated by Charter.
"	*London Assurance* ...	Mixed ...	Life and Fire	" "

SECOND PERIOD.

1762	*Equitable*	Mutual ...	Life	Deed enrolled in Queen's Bench.
1797	*Pelican*	Mixed ...	Life	Special Act.
1806	*London Life*	Mutual ...	Life	Enrolled in Court of Cn. Pleas.
"	*Provident*	Mixed ...	Life	Deed of Settlement.
"	*Rock*	Mixed ...	Life	Deed of Settlement and Acts.
1807	*Eagle*	Mixed ...	Life	Special Act, 53 George III., &c.
"	*West of England*	Mixed ...	Life and Fire	Special Act in 1813.
1808	*Atlas*	Mixed ...	Life and Fire	Special Act, 54 Geo. III., c. 79.
"	*Norwich Union*	Mutual ...	Life	Special Acts.
1810	*Sun*	Mixed ...	Life	Special Act, 54 Wm. IV., c. 47.
1814	*Union*	Mixed ...	Life and Fire	Deed of Set. and Special Act.
1815	*Scottish Widows' Fund* ...	Mutual ...	Life	Deed of Settlement and Acts.

THIRD PERIOD.

Est.	Present and Original Names of Offices.	Principles.	Nature of Business.	Powers under which they act.
1820	*Imperial*	Mixed	Life	Act of Pt. 4 and 5 Vic. c. 94.
1821	*Guardian*	Mixed	Life and Fire	Special Act, 13 and 14 Vic.
1822	*National of Ireland*	Mixed	Life and Fire	Incorporated by Charter.
1823	*Economic*	Mutual	Life	Special Act, 3 Wm. IV.
,,	*Edinburgh*	Mixed	Life	Special Act, 8 and 9 Vic., c. 76.
,,	*North British & Mercantile* (late *North British*)	Mixed	Life and Fire	Royal Charter and Special Act.
,,	*Law Life*	Mixed	Life	Deed of Set. and Special Act.
1824	*Alliance*	Mixed	Life and Fire	Special Acts, 5 Geo. IV., c. 137.
,,	*Clerical, Medical, & Gen.*	Mixed	Life	Special Act, 13 and 14 Vic., c. 9.
,,	*Patriotic* (*Irish*)	Mixed	Life and Fire	Special Act, 5 Geo. IV., c. 154.
,,	*United Kent*	Mixed	Life and Fire	Deed of Settlement.
,,	*Yorkshire*	Proprietary	Life and Fire	Special Act, 2 Wm. IV.
,,	*Scottish Union*	Mixed	Life and Fire	Royal Charter and Spec. Act.
1825	*Crown*	Mixed	Life	Deed of Settlement.
,,	*Scottish Provincial* (late *Aberdeen*)	Mixed	Life and Fire	Special Act of Incorporation.
,,	*Standard* (late *Life Insur. Company of Scotland*)	Mixed	Life	Special Act.
,,	*University*	Mixed	Life	Royal Charter.
1826	*Scottish Amicable*	Mutual	Life	Special Act.
1829	*Clergy Mutual*	Mutual	Life	Special Act, 10 Geo. IV., c. 56.
1830	*National*	Mutual	Life	Deed of Settlement.
1831	*Scottish Equitable*	Mutual	Life	Royal Charter and Special Acts.
1832	*Friends' Provident*	Mutual	Life	Enrolled under 3 and 4 Vic.
1833	*Argus*	Mixed	Life	Spec. Act, 5 & 6 Wm. IV., c. 76.
,,	*Caledonian*	Mixed	Life and Fire	Royal Charter and Spec. Act.
1834	*Mutual*	Mixed	Life	Deed of Settlement.
,,	*Universal*	Mixed	Life	Special Act.
1835	*Metropolitan*	Mutual	Life	Deed enrolled in Chancery.
,,	*National Provident*	Mutual	Life	Friendly Soc. & *Discharge* Acts.
,,	*Nottingham and Derby*	Mixed	Life and Fire	Deed of Settlement.
1836	*Hand-in-Hand*	Mutual	Life	Deed Enrolled.
,,	*Legal and General*	Mixed	Life	Deed of Settlement.
,,	*Liverpool & London & Globe* (late *Liverpool & London*)	Mixed	Life and Fire	Special Acts of Parliament.
,,	*Northern* (late *North of Scotland*)	Mixed	Life and Fire	Special Act of Incorporation.
,,	*Westminster and General*	Mixed	Life and Fire	Deed of Settlement.
1837	*General* (late *Dissenters and General*)	Mixed	Life and Fire	Special Acts, 3 Vic., c. 20.
,,	*Scottish Provident*	Mutual	Life	Special Act of Incorporation.
,,	*International* (late *National Loan Fund*)	Mixed	Life	Regis. under 7 and 8 Vic., c 110.
1838	*Albert* (late *Freemasons*)	Mixed	Life	Joint-stock Company's Act.
,,	*City of Glasgow*	Mixed	Life	Special Act, 5 & 6 Vic., c. 65.
,,	*Life Associat. of Scotland* (late *Edinb. and Glasg.*)	Mixed	Life	Royal Charter and Special Act.
1839	*English and Scottish Law*	Mixed	Life	Special Act.
1840	*Church of England*	Mixed	Life and Fire	Special Act, 4 and 5 Vic., c. 92.
,,	*Provident Clerks*	Mutual	Life and Sick	Special Act.
,,	*Reliance*	Mutual	Life	Deed of Settlement.
,,	*Royal Farmers*	Mixed	Life and Fire	Special Act.
,,	*United King. Temperance*	Mutual	Life and Fire	Deeds of Settlement.
1841	*Scottish National* (late *National Insur. of Scot.*)	Mixed	Life and Fire	,, ,,
,,	*Wesleyan and Gen. Prov.*	Friendly	Life	Friendly Society's Act.
1843	*Preserver*	Proprietary	Life and Fire	One Proprietor only.
,,	*Star*	Mixed	Life	Special Act.
1844	*British Mutual*	Mutual	Life	Deed of Settlement.
,,	*Equity and Law*	Mixed	Life	,, ,,
,,	*Great Britain*	Mutual	Life	,, ,,

FOURTH PERIOD.

1845	*Royal*	Mixed	Life and Fire	Joint-stock Company's Act.
1846	*London & Provincial Law*	Mixed	Life	,, ,,
,,	*Sovereign*	Mixed	Life	,, ,,
,,	*Brighton & Suss. Mut. Prov.*	Mutual	Life	Friendly Society's Act.
1847	*British Empire Mutual*	Mutual	Life	Special Act, 15 Vic., c. 53.

FOURTH PERIOD *continued.*

Est.	Present and Original Names of Offices.	Principles.	Nature of Business.	Powers under which they act.
1848	*Gresham*	Mixed ...	Life	Joint-stock Company's Act.
"	*Prudential* (late *British Prud. and Consolidated*, formerly *British Prud.*, originally *Prud. Mutual*).	Mixed ...	Life	" "
1850	*Law Property*	Mixed ...	Life and Titles	" "
1852	*Lancashire*	Mixed ...	Life and Fire	" "
"	*Marine and General* ...	Mutual ...	Life & Marine	
"	*Provincial* (*Welsh*) ...	Mixed ...	Life and Fire	Joint-stock Company's Act.
1853	*Briton, Medical & General* (late *Briton*)	Mixed ...	Life	" "
"	*European* (late *People's Provident*)	Mixed ...	Life	" "
"	*Emperor*	Mixed ...	Life and Fire	" "
1854	*British Equitable*	Mixed ...	Life	" "
"	*Law Union*	Mixed ...	Life and Fire	" "
"	*United Brothers*	Mutual ...	Life and Sick.	" "
"	*National Industrial* (late *Operatives*)	Proprietary ...	Life and Loan	Incorp. under 7 & 8 Vic. c. 110.
1855	*Midland Counties*	Mixed ...	Life and Fire	Joint-stock Company's Act.
"	*Whittington*	Mixed ...	Life	" "
"	*National Mutual* (late *United Traders*)	Mutual ...	Life	Friendly Society's Act.
1856	*Mut. Prov. Alliance* (late *Christian Mut. Prov.*) ...	Mutual ...	Life and Sick.	Friendly Society's Act.
1857	*Queen*	Mixed ...	Life	Deed of Settlement
1860	*Norwich Provident* ...		Life	
"	*Victoria Benefit*	Mutual ...	Life and Sick.	Friendly Society's Act.
1861	*Western Counties & Lond.*	Mutual ...	Life	Incorp. under 7 & 8 Vic. c. 110.

FIFTH PERIOD.

Est.	Present and Original Names of Offices.	Principles.	Nature of Business.	Powers under which they act.
1862	*Commercial Union* ...	Mixed ...	Life, Fire, Mar.	Deed of Settlement.
"	*London and Lancashire* ...	Mixed ...	Life and Fire	Companies' Act, 1862. Limited.
"	*Southampton Mutual* ...	Mutual ...	Life	" "
1863	*Hercules*	Mixed ...	Life and Fire	" "
"	*National Union*	Mixed ...	Life	" "
1864	*Albion*	Mixed ...	Life	" "
"	*Life Investment*	Mixed ...	Life, Mort. An.	" "
"	*London and Southwark* ...	Mixed ...	Life and Fire	" "
"	*Sceptre*	Mixed ...	Life	" "
1865	*Birmingham Alliance* ...	Mixed ...	Life, Acc. Gua.	" "
"	*General Provident* ...	Mixed ...	Life	" "
"	*London and Northern* ...	Mixed ...	Life and Fire	" "
"	*National Guardian* ...	Mixed ...	Life and Loan	" "
"	*Provincial Union*	Mixed ...	Life and Sick.	" "
1866	*British Workman*	Mutual ...	Life and End.	Friendly Society's Act.
"	*Imperial Union*	Mixed ...	Life, Ann. End.	Companies' Act, 1862. Limited.
"	*Industrial*	Mixed ...	Life, End. Ann.	" "
"	*London and Manchester* ...	Mixed ...	Life, Fire, Acc.	" "
"	*Manchester Provident* ...	Mixed ...	Life, Fire, Ann.	" "
"	*Northern Patriotic* ...	Mixed ...	Life, End. Sick.	" "
"	*Planet*	Mixed ...	Life, Fire, Ann.	" "
"	*Prosperous*	Mixed ...	Life, Sick. End.	" "
"	*United English & Scottish*	Mixed ...	Life, Ann. Rev.	" "
"	*United Kingdom*	Mixed ...	Life, Ann. Gua.	" "
"	*Universal Ins. Loan and Investment*	Mixed ...	Life, Fire, Mar.	" "
"	*Scottish Imperial*	Mixed ...	Life, Fire, Ann.	" "
"	*Sheffield and Lincoln* ...	Mutual ...	Life, Sick. End.	Friendly Society's Act.

These Tables must be understood to apply to LIFE OFFICES only; Fire being named where both branches are included in the same deed. Many of the Life Offices are worked with Fire Offices of the same name, but otherwise distinct.

The dates in all cases relate to the time when Life business was actually commenced; several of the Offices carried on the Fire for nearly a century before they took up Life business.

The Tables also include some few Friendly Societies, which, from their extensive ramifications and mode of conducting business, are virtually Industrial Life Assurance Societies.

TABLE OF LIFE ASSURANCE OFFICES WHICH HAVE CEASED TO EXIST SINCE 1844, AND WHAT BECAME OF THEM.

Names of Offices.	When Founded	Principles.	When ceased operations.	Destiny.
Absolute Security	1852	Mixed	1852	A swindle.
Absolute	1856		1857	Transferred to *City of London*, afterwards itself absorbed.
Accumulative	1854	Proprietary	1854	Trans. to *Anglo-Australian*, afterwards itself absorbed.
Achilles, No. 1	1841		1844	Trans. to *Great Brit. Mutual.*
Achilles, No. 2	1853	Mixed	1858	Transferred to *City of London*, afterwards itself absorbed.
Adamant	1852		1852	
Age	1851	Mixed	1856	Transferred to *Engineers*, afterwards itself absorbed.
Agriculturist	1845	Mixed	1848	Transferred to *Norwich Union.*
Ægis	1849	Mixed	1854	Transferred to *Mitre*, afterwards itself absorbed.
Albion	1805	Mixed	1858	Transferred to *Eagle.*
Alfred	1839	Mixed	1858	Transferred to *Eagle.*
Amazon	1853	Mixed	1854	Winding up in Chancery.
Anchor	1852	Mixed	1857	Trans. to *Bank of London*, afterwards itself absorbed.
Anglo-Australian	1853	Mixed	1858	Trans. to *British Provident*, afterwards itself absorbed.
Annual Bonus Life Ass.	1851		1852	A swindle.
Ark	1853	Mixed	1857	Became a total wreck.
Asylum	1824		1857	Transferred to *London Assurance Corporation.*
Athenæum	1851	Mixed	1856	Transferred to *People's Provident*, now called *European.*
Austral., Col., and General	1839	Mixed	1852	Trans. to *Liverpool and Lond.*
Bank of London	1856	Mixed	1858	Transferred to *Albert.*
Bank of Deposit, alias *Natl. Assur. Invest.*, which see.				
Beacon	1853	Mixed	1856	Transferred to *Albert.*
Beneficent Life Assurance	1852		1852	A swindle.
Birkbeck	1852	Mixed	1857	Trans. to *Home Counties*, afterwards itself absorbed.
Bon Accord	1845	Proprietary	1849	Transferred to *Northern.*
Brewers and Distillers	1851	Proprietary	1853	Dissolved.
British	1847	Mixed	1853	Transferred to *Lancashire.*
British Empire	1839	Mixed	1844	Transferred to *Monarch*, afterwards itself absorbed.
Birmingham and Midland	1862	Mixed	1865	Trans. to *Birmingham Alliance*
British Isles	1860		1860	Died out.
Britannia Proprietary	1837	Proprietary	1865	Trans. to *Briton Med. and Gen.*
Ditto, Mutual	1837	Mutual		
British Commercial	1820	Mixed	1860	Transferred to *British Nation*, afterwards itself absorbed.
British Exchequer	1856	Mixed	1858	Transferred to *Brit. For. & Col.*, afterwards itself absorbed.
British & Foreign Reliance	1855	Mixed	1859	Transferred to *Law Property.*
British Shield	1857		1857	Trans. to *Lon. & Provin. Prov.*, afterwards itself absorbed.
British, Foreign, & Colonial	1857		1859	Transferred to *Consols*, afterwards itself absorbed.
British Protector	1851	Mixed	1859	Transferred to *Sovereign.*
British Provident	1850	Mixed	1859	Transferred to *British Nation*, afterwards itself absorbed.
British Industry	1852	Mixed	1860	Trans. to *British Prudential.*
British Union	1863	Mixed	1865	Transferred to *Empire*, afterwards itself absorbed.
British Nation	1854	Mixed	1865	Transferred to *European.*
British Amicable	1857		1857	Transferred to *General.*
British Standard	1864	Mixed	1866	
Brunswick	1855	Mixed	1857	Transferred to *Briton.*
Cambrian and Universal	1849	Mixed	1857	Transferred to *Mitre*, afterwards itself absorbed.
Candidate	1845	Proprietary	1847	Died out.
Catholic, Law, and General	1846	Mixed	1857	Transferred to *Phœnix Life*, afterwards itself absorbed.
Caxton	1854	Proprietary	1856	Winding up in Chancery.
City	1862	Proprietary	1866	Transferred to *Sovereign.*
City and County	1844	Mixed	1866	Transferred to *Empire*, afterwards itself absorbed.

Names of Offices.	When Founded	Principles.	When ceased operations.	Destiny.
City of London	1844	Mixed	1859	Transferred to *Eagle.*
City of London and Gen.	1863		1863	
Civil Service	1854	Mixed	1854	Dissolved. A swindle.
Clarence	1854		1854	Trans. to *United Homœopathic,* afterwards itself absorbed.
Commercial (*Scotch*)	1840	Proprietary	1846	Transferred to *Standard.*
Commercial, No. 4	1856	Mixed	1858	Trans. to *Eng. Widows' Fund,* afterwards itself absorbed.
Colonial	1846	Mixed	1866	Transferred to *Standard.*
Colonial and General	1846	Mixed	1847	Transferred to *Standard.*
Commercial and General	1841	Mixed	1853	Transferred to *London Assurance Corporation.*
Commonwealth	1853	Proprietary	1854	Dissolved.
Confident	1855	Mixed	1864	Amalg. with *Gen. Prov.,* No. 1, afterwards itself absorbed.
Constitution	1856	Mixed	1857	Dissolved by priv. arrangemnt.
Consols	1859		1862	Trans. to *Provident Clerks.*
Consolidated	1846	Mixed	1865	Amalg. with *Brit. Prudential.*
Cosmopolitan	1855	Mixed	1856	Winding up in Chancery.
County (*Herts.*)	1849	Mixed	1853	Trans. to *City of London,* afterwards itself absorbed.
County	1864		1865	Trans. to *Imperial Union.*
Counties Union	1852	Mixed	1853	Winding up in Chancery.
Defender	1846	Mixed	1858	Trans. to *Leeds and Yorkshire,* afterwards itself absorbed.
Depos. Assur. & Disc. Bank, alias *Life Assur. Treasury,* which see.				
Deposit Assurance (*Aberd.*)	1846		1848	
Deposit and General	1852	Mixed	1856	Trans. to *City of London,* afterwards itself absorbed.
Diadem	1854	Proprietary	1857	Trans. to *British Provident,* afterwards itself absorbed.
Durham and North	1854	Mixed	1856	Trans. to *Bank of London,* afterwards itself absorbed.
East of England	1849	Mutual	1858	Transferred to *Reliance.*
East of Scotland	1845	Proprietary	1852	Transferred to *Colonial,* afterwards itself absorbed.
Eclipse	1854	Proprietary	1856	Shut up. A failure.
Economy	1845	Mutual	1845	A French Office.
Empire	1854	Mixed	1857	Trans. to *Family Endowment,* afterwards itself absorbed.
Empire	1865	Mixed	1867	In liquidation.
English and Foreign	1852	Mixed	1857	Trans. to *National Alliance,* afterwards itself absorbed.
English Provident	1855	Mixed	1857	Transferred to *Kent Mutual.* afterwards itself absorbed.
England	1845	Proprietary	1846	A failure.
English & Cambrian, after. called *Commercial,* wh. see.				
English Widows' Fund	1846	Mixed	1860	Transferred to *British Nation,* afterwards itself absorbed.
English and Irish Church	1853	Mixed	1861	Transferred to *British Nation,* afterwards itself absorbed.
Engineers Masonic and Gen.	1847	Mutual	1858	Trans. to *Eng. & Irish Church,* afterwards itself absorbed.
Era	1852	Mixed	1858	Transferred to *Law Property.*
Etonian and General	1847	Mixed	1850	Trans. to *Equity and Law.*
Exchange	1856	Mixed	1856	
European, No. 1	1819	Mixed	1858	Trans. to *People's Provident,* now called *European.*
European Alliance Full Pay	1852		1853	A swindle.
Exchequer and Railway	1851	Mixed	1851	Dissolved.
Experience	1843	Mixed	1850	Transferred to *Standard.*
Falcon	1854	Mixed	1856	Trans. to *Bank of London,* afterwards itself absorbed.
Financial	1864	Mixed	1866	Transferred to *Whittington.*
Friend in Need	1862	Mixed	1866	Transferred to *Empire,* afterwards itself absorbed.
Family Assur., & Sick Fund	1861	Friendly	1863	
Family Endowment	1835	Mixed	1861	Transferred to *Albert.*
Female Provident	1855		1857	
General Indemnity	1853	Mixed	1857	Transferred to *Commercial,* afterwards itself absorbed.
General Provident, No. 1, afterwards called *Gen. Prov and Confident*	1862	Mixed	1865	Amalg. with *Gen. Prov.* (No. 2.)
General Provincial	1864	Mixed	1867	Amalg. with *Whittington.*

Names of Offices.	When Founded	Principles.	When ceased operations.	Destiny.
Gen. Ann. and Life Assur.	1861	Mutual	1865	Transferred to *Sovereign*.
Globe	1803	Mixed	1864	Amalg. with *Liverpool & Lond.*
Glasgow Assurance	1845		1848	Trans. to *Scottish Provincial*.
Halifax, Keighley, and Bradford	1845	Proprietary	1854	Transferred to *Unity*, afterwards itself absorbed.
Herald	1856	Mixed	1860	Winding up in Chancery.
Home Counties	1853	Mixed	1857	Transferred to *Whittington*.
Home and Foreign	1852	Proprietary	1853	Dissolved.
Home and Colonial	1864	Mixed	1866	Transferred to *Northern*, the marine business excepted.
Hope	1807	Mixed	1844	Transferred to *Imperial*.
Hope	1852	Mutual	1855	Transferred to *Mitre*, afterwards itself absorbed.
Householders and General	1852	Mixed	1858	T. to *Eng. and Irish Church*, afterwards itself absorbed.
Hull and London	1855	Mixed	1857	Winding up in Chancery.
Independent	1818	Proprietary	1852	Wound up in Chancery.
India and London	1846	Proprietary	1860	Trans. to *People's Provident*, now called *European*.
Indisputable of Scotland	1860	Mixed	1866	Trans. to *Briton, Mid. and Gen.*
Industrial and General	1849	Mixed	1854	Trans. to *People's Provident*, now called *European*.
Industrial Life	1852		1853	A swindle.
Justice	1854	Proprietary	1857	Winding up in Chancery.
Kent Mutual	1850	Mutual	1861	Transferred to *Albert*.
Leeds and Yorkshire	1824	Mixed	1862	Trans. to *Liverpool and Lond.*
Lic. Victuallers, afterwards called *Monarch*, which see.				
Legal and Commercial	1845	Proprietary	1857	Transferred to *Victoria*, afterwards itself absorbed.
Lion of England	1852		1852	
Lombard	1854	Proprietary	1856	Never issued a Policy.
London and County	1851	Mixed	1859	Winding up in Chancery.
London, Edinbro', & Dublin	1839	Mixed	1846	Trans. to *Liverpool and London*.
London Mutual	1849	Mutual	1857	Transferred to *Eagle*.
Lond. & Prov. Joint Stock	1847	Proprietary	1853	Trs. to *Legal and Commercial*, afterwards itself absorbed.
London Mercantile	1853	Mixed	1855	Trans. to *East of England*, afterwards itself absorbed.
London and Westminster	1839	Mutual	1844	Transferred to *Britannia*, afterwards itself absorbed.
London and Continental	1854	Mixed	1859	Transferred to *St. George*, afterwards itself absorbed.
London & Provincial Prov.	1855	Mixed	1861	Transferred to *British Nation*, afterwards itself absorbed.
London and Yorkshire	1858	Mixed	1862	Transferred to *Whittington*.
Life Association of England	1863	Mixed	1864	Winding up in Chancery.
Life Assurance Treasury	1855		1861	Transferred to *Waterloo*, afterwards itself absorbed.
London and Westminster	1863		1865	Trans. to *British Prudential*.
London Equitable	1855	Mutual	1863	Transferred to *British Nation*, afterwards itself absorbed.
London Indisputable	1818	Mutual	1857	Transferred to *Eagle*.
Mariners and General	1843	Proprietary	1847	Transferred to *Eagle*.
Marylebone and General	1853	Mixed	1854	Trans. to *English & Foreign*, afterwards itself absorbed.
Mercantile (Scotch)	1844	Mixed	1851	Trans. to *Life Assoc. of Scot.*
Mentor	1848	Mixed	1855	Transferred to *Eagle*.
Minerva	1836	Mixed	1864	Transferred to *Standard*.
Metropolitan Counties	1848	Mixed	1862	Transferred to *Western*, afterwards itself absorbed.
Manchester	1824		1846	Transferred to *Pelican*.
Manchester and London	1853	Mixed	1862	Transferred to *Western*, afterwards itself absorbed.
Mitre	1846	Mixed	1860	Transferred to *Law Union*.
Mercantile Provident	1854		1855	
Mercantile Professnl & Gen.	1864		1865	Trans. to *National Standard*, afterwards itself absorbed.
Magnet	1854	Mixed	1859	Transferred to *Waterloo*, afterwards itself absorbed.
Medical, Invalid and Gen.	1840	Mixed	1860	Transferred to *Albert*.
Medical, Legal, and Gen.	1846	Mixed	1857	Transferred to *New Equitable*, afterwards itself absorbed.
Mercantile, Life, and Guar.	1858	Mutual	1860	Winding up in Chancery.
Merchants and Tradesmen	1844		1858	Trans. to *Bank of London*, afterwards itself absorbed.

Names of Offices.	When Founded	Principles.	When ceased operations.	Destiny.
Monarch	1835	Mixed ...	1857	Trans. to *Liverpool & London.*
Morayshire	1840	Proprietary ..	1856	Transferred to *North British.*
Mutual Accumulation ...	1837		1847	Trans. to *City of Glasgow.*
National Church	1845	Proprietary ...	1845	Died out.
National Friendly	1846	Friendly ...	1853	Transferred to *Protestant,* afterwards itself absorbed.
National Guardian	1850	Mixed ...	1857	Transferred to *Albert.*
National Alliance	1855	Mixed ...	1859	Transferred to *Sovereign.*
National Mercantile ..	1837	Mutual ...	1866	Transferred to *Eagle.*
National Provincial, afterwards called *Bank of London,* which see.				
Nelson	1854		1855	Winding up in Chancery.
New Alliance, afterwards called *British and Foreign Reliance,* which see.				
National Assurance Invest.	1844	Mutual ...	1861	Transferred to *Waterloo,* afterwards itself absorbed.
National Standard	1865		1866	Transferred to *Financial.*
National Weekly	1852		1852	
New Equitable	1851	Mixed ...	1862	Transferred to *Briton.*
New National	1854	Mixed ...	1865	Trans. to *National Guardian.*
New Protector, after. called *Brit. Protector,* which see.				
North of England	1844	Mixed ...	1858	Trans. to *Liverpool and Lond.*
Newcastle on Tyne	1783		1860	Transferred to *North British.*
Oak	1851	Mutual ...	1854	Trans. to *London and County,* afterwards itself absorbed.
Observer	1855	Mixed ...	1857	Trans. to *City of London,* afterwards itself absorbed.
Official and General ...	1853	Mixed ...	1855	Trans. to *National Guardian,* afterwards itself absorbed.
Palladium	1824	Mixed ...	1856	Transferred to *Eagle.*
Parental	1854	Proprietary ...	1854	Winding up in Chancery.
Pecuniary Aid	1852		1852	
Peoples	1847	Mixed ...	1851	Transferred to *City of London,* afterwards itself absorbed.
Phœnix	1848	Mixed ...	1860	Transferred to *British Nation,* afterwards itself absorbed.
Professional	1846	Mixed ...	1861	Transferred to *European.*
Promoter	1826	Mixed ...	1862	Transferred to *Guardian.*
Practicable	1845	Proprietary ...	1846	Died out.
Preceptors and General ...	1848	Proprietary ...	1849	Transferred to *Albert.*
Preston & North Lancashire	1845	Proprietary ...	1848	Transferred to *Sun.*
Prince of Wales	1851	Mixed ...	1857	Trans. to *People's Provident,* now called *European.*
Protector	1835	Mixed ...	1848	Transferred to *Eagle.*
Protestant	1852	Mixed ...	1855	Dissolved in Chancery.
Public	1859	Mixed ...	1862	Trans. to *City,* afterw. itself abs.
Reciprocal	1851	Mixed ...	1852	Dissolved. A swindle.
Railway and General Provident, afterwards *Universal Provident,* which see.				
Royal Naval and Miltiary ...	1837	Mixed ...	1866	Transferred to *European.*
Saxon	1854	Mixed ...	1856	Trans. to *Era,* afterw. itself abs.
Safety	1854	Mixed ...	1859	Transferred to *Sovereign.*
Sceptre	1851	Proprietary ...	1852	Dissolved.
Sceptre of England	1852		1852	
Security	1854	Mixed ...	1856	Winding up in Chancery.
Schoolmasters and General	1851	Mutual ...	1859	Trans. to *Church of England,*
Scottish Freemasons	1844	Mutual ...	1848	Transferred to *Northern.*
Scottish Friendly	1863	Mutual ...	1867	Transferred to *Crown.*
Scottish Industrial	1863	Mutual ...	1866	Transferred to *Empire,* afterwards itself absorbed.
Scottish Life and Guarantee	1844	Mixed ...	1848	Trans. to *Mercantile* (Scotch), afterwards itself absorbed.
Sea, Fire, Life	1849	Proprietary ...	1850	Dissolved. A swindle.
Self Reliance	1853	Proprietary ...	1854	Died out.
Sheffield Rotherham, & Chesterfield, afterwards called *North of Eng.,* which see.				
South of England	1841	Proprietary ...	1843	Transferred to *Britannia,* afterwards itself absorbed.
St. George	1854	Mixed ...	1861	Trans. to *Metro. Counties & Gen.* afterwards itself absorbed.

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Names of Offices.	When Founded	Principles.	When ceased operations.	Destiny.
Solicitors and General	1846	Mixed	1866	Transferred to *Eagle*.
Standard of England, afterwards called *Britannia Mutual*, which see.				
Suffolk and Gen. Coun. Amic.	1834		1850	Transferred to *Alliance*.
Times	1849	Mixed	1857	Transferred to *Albert*.
Tontine	1846	Proprietary	1849	Trans. to *Engineers & Masonic*, afterwards itself absorbed.
Trafalgar	1851	Mixed	1854	Transferred to *Unity General*, afterwards itself absorbed.
United Counties	1864	Mixed	1867	In liquidation.
United Deposit	1845	Proprietary	1853	Trans. to *Scottish National*.
United Life and Guarantee	1849	Mixed	1854	Trans. to *People's Provident*, now called *European*.
United Homœpathic, afterwards called *English Provident*, which see.				
United Mutual Mining	1849	Mutual	1857	Trans. to *People's Provident*, now called *European*.
United Service	1850	Mixed	1857	Trans. to *People's Provident*, now called *European*.
United Traders	1848	Friendly	1856	Dissolved.
United Kingdom	1834	Mixed	1862	Transferred to *North British*.
United Orders	1835	Friendly	1856	
Unity General	1854	Mixed	1862	Transferred to *Briton, Med., and General*.
Universal Provident	1853	Provident	1855	Trans. to *Engineers & Masonic* afterwards itself absorbed.
Universal Life and Fire	1852		1853	A swindle.
Victoria Legal and Com.	1838	Mixed	1865	Transferred to *Standard*.
Volunteer Service and Gen.	1861	Mixed	1865	Transferred to *North British*.
Waterloo	1851	Mixed	1862	Transferred to *British Nation*, afterwards itself absorbed.
Wellington	1853	Mixed	1863	Transferred to *British Nation*, afterwards itself absorbed.
Westminster	1792	Mixed	1863	Transferred to *Guardian*.
Western	1842	Mixed	1865	Transferred to *Albert*.
Western (*Scotch*)	1844		1846	Transferred to *North of Scot.* now called *Northern*.
Widows' National	1845		1846	
World	1834		1855	
World	1858	Mixed	1863	Trans. to *City and County*, afterwards itself absorbed.
York and London	1834	Proprietary	1844	Transferred to *Standard*.
Yorksh, Lancsh, Mid. Coun.	1862	Friendly	1865	Trans. to *Provincial Union*.

LIFE OFFICES WHICH HAVE CHANGED THEIR NAMES.*

When Established.	Former Name.	Name as altered.	When Changed.
1825	*Aberdeen*	*Scottish Provincial*	1852
	Brit. Prudential, see *Prud. Mutual*		
1845	*Christian Mutual Provident*	*Mutual Provident Alliance*	1858
1837	*Dissenters and General*	*General*	1849
1839	*Edinburgh and Glasgow*	*Life Association of Scotland*	1841
1850	*English and Cambrian*	*Commercial*	1856
1838	*Freemasons*	*Albert*	1850
1825	*Life Insurance Compy. of Scotland*	*Standard*	1832
1835	*Licensed Victuallers*	*Monarch*	1851
1843	*National Insurance of Scotland*	*Scottish National*	1860
1838	*National Loan Fund*	*International*	1855
1851	*National Provincial*	*Bank of London*	1856
1855	*New Alliance*	*British and Foreign Reliance*	1857
1851	*New Protector*	*British Protector*	1853
1836	*North of Scotland*	*Northern*	1848
1854	*Operatives*	*National Industrial*	1855
1853	*People's Provident*	*European*	1859
1848	*Prudential Mutual*	*British Prudential*	1860
		,, *and Consolidated*	1865
		Prudential	1867
1853	*Railway and General Provident*	*Universal Provident*	1854
1845	*Sheffield, Rotherham, & Chesterfield*	*North of England*	1847
1839	*Standard of England*	*Britannia Mutual*	1839
1855	*United Homœopathic*	*English Provident*	1856
1855	*United Traders*	*National Mutual*	1859

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* It has been considered unnecessary to include in this list offices which have simply added to their original names, those alterations being noticed in the foregoing Tables.

DIVISION II.

POPULAR NOTES
ON THE LAWS OF MORTALITY,
AS BEARING UPON LIFE ASSURANCE;
ALSO
ON POPULATION AND LONGEVITY.

CHAPTER I.

FACTS IN HUMAN LIFE.

The number of languages spoken in the world amounts to 3064. The inhabitants of the globe profess more than 1,000 different religions. The number of men is about equal to the number of women. The average of human life is about thirty-three years. One quarter die previous to the age of seven years, one half before seventeen, and those who pass this age enjoy a felicity refused in one half of the human species. To every 1,000 persons one reaches 100 years of life; to every 100 only six reach the age of sixty-five; and not more than one in 500 lives eighty years of age. There are on earth 1,000,000,000 inhabitants; and of these 33,333,333 die every year, 91,824 every day, 3,780 every hour, and sixty every minute, or one every second. These losses are about balanced by an equal number of births. The married are longer-lived than the single, and above all, those who observe a sober and industrious conduct. Tall men live longer than short ones. Women have more chances of life in their favour previous to being fifty years of age than men, but very few afterwards. The number of marriages is in proportion of seventy-five to every 1000 individuals. Marriages are more frequently after the equinoxes: that is, during the months of June and December. Those born in spring are generally more robust than others. Births and deaths are more frequent by night than by day. The number of men capable of bearing arms is calculated at one-fourth of the population.—*Quarterly Review.*

"MORTALITY," says Dr. Southwood Smith—and we need no greater authority—"is subject to a law the operation of which is as regular as that of gravitation." While Mr. Babbage, who looked at the subject more particularly in its bearings upon Life Assurance, says, "Nothing is more proverbially *uncertain* than the duration of human life, when the maxim is applied to an individual; but there are few things less subject to fluctuation than the average duration of life in a multitude of individuals." Do we want an illustration? Take 5,000 persons *in the prime of life*, and note their deaths. They will be found in something like the following proportions: In the first ten years 600; in the second ten, 750; in the next, 850; and so on, progressively increasing at each period, until the whole have passed away. The average duration of life in Great Britain, at the present time, is

41 years—ranging from 26 (formerly only 24) in Liverpool, and 37 in the metropolis, up to 45 in Surrey. In France the duration is 40 years; in Sweden, 39; and, in other countries, progressively downwards until the average throughout the world is found to be only 33 years. In Rome, thirteen hundred years ago, the average was much the same as in England now. Amongst the nobility and gentry of England, the "expectation of life," at the age of 84, is found to be four years. Amongst the poor fishermen of Ostend it is precisely the same. M. Deparcieux, who wrote a century ago, established the expectation of life at that time in France, at the same age, to have been 3½ years Halley, whose observations went back to the seventeenth century, found the expectation to be slightly, but not much, less. We know, however, that the duration of life, at all ages, has increased considerably during the past century. And we have the authority of Dr. Southwood Smith, for stating that while the mortality of all the other epochs of life is affected by country, by station, and by a multitude of influences arising out of these and similar circumstances, the concurrent evidence of all observation shows that at this, and the like advanced ages, the mean term of existence is nearly the same in all countries, at all periods, and amongst all classes of society.*

Such is the class of facts with which we propose to deal in this division. Those who assent to the dictum of Pope, that "the greatest knowledge of mankind is MAN," will readily admit their importance. They relate to everybody, and for this reason, we presume, they have too generally shared the fate which an adage of long standing predicts to subjects of such extended relationship. If the poet had paused and added another couplet to the effect that there is no branch of human knowledge with which mankind is so little conversant as with that which relates to man, he would still have been strictly within the bounds of truth. Beyond the fact that we are born, pass through the world, and die, how little do the majority of us know of the phases of our earthly existence? If such facts are presented to us it is generally in some such crude form as the paragraph at the head of this chapter—sufficient only to excite a passing interest, and remind us how utterly inadequate *mere* lines or columns of figures are for the purposes of general instruction, unless the interest be otherwise awakened. It seems almost incredible that millions of people should exist from generation to generation, unacquainted even with the ordinary laws necessary for the due preservation of individual health, leaving out those general sanitary laws which regulate the health of towns, cities, and kingdoms, the laws of population, or that combination of all these laws, spoken of as the laws of mortality. Yet such is, unfortunately, the fact.

Leaving the general public to obtain, at the hands of "social reformers" and "popular educators," that information they so much need, we come to another class, who it is more particularly within our scope to address—we mean those who are engaged in promulgating the advantages of Life Assurance in the capacity of ASSURANCE AGENTS. *They*, at least, should be conversant with *all* the popular elements connected with the science; and we believe, for the most part, they are thoroughly alive to this necessity. Their excuse has hitherto been the inaccessible nature of the materials upon which this knowledge must be based. This we have endeavoured to remedy by the present publication; and with all its defects we trust it will not entirely fail in its aim. We will briefly indicate the leading points with which we consider all agents and others engaged in the extension of Life Assurance should be familiar; and then proceed to render, so far as we are able, the required information. They should know that this country varies in its degrees of salubrity to an extent hardly exceeded by any country in the world; and that this variation, while, to some extent, depending upon *locality*, chiefly proceeds from neglect of sanitary laws, or similar causes. They should understand that *occupation* frequently exercises an influence upon health no less important than locality. That, in some districts, both these evils are combined, and they should know when and which these are, in order either to avoid them, or to frame suitable conditions to meet them. They should be prepared to expect a given annual average of deaths among any number of persons living; and, having regard to all the circumstances, to estimate what that average may be. They should be familiar with the "expectation of life" at all ages, and learned in the uses of periodic enumerations of the people, as well as the necessity for the accurate record of all births, deaths, and even marriages: for they would thus learn that the operations of the human will resolve themselves into laws as fixed and certain as any other laws to which our lives are subject. Out of any given number of the sexes of equal age, there will be (in the absence of any counteracting influence) a given number of marriages: these will produce a given number of births; and from these will result (if the numbers be sufficiently large to obtain an average) a graduated succession of deaths, extending over a period of not less than one hundred years! From the marriages, also, there will result a certain proportion of widows and widowers. Of these, again, a fixed proportion will re-marry; and that proportion will be far greater amongst the widowers than the widows. That of the births the number of males will exceed the number of females; while of adults living the proportions will be reversed. Nor should they be surprised to learn that by the application of scientific investigation, all these proportions can be predicted with accuracy before the events have happened. We shall endeavour to present the materials from which a knowledge of these facts, and many similar ones, is derived, in a clear and understandable form; classifying them as far as circumstances will admit, and studiously avoiding technicalities. Their magnitude already startles us; but this arises from the multitudinous considerations the subject presents. Writing for a popular purpose, and on a subject which certainly *ought* to be popular, we freely admit that we have not limited ourselves to such points as Insurance agents *only* should understand. Acting upon the belief that all that relates to humanity relates to every man, we have assumed a broader basis, and endeavoured to bring together, in these pages, a store of facts and considerations which every man may be the wiser and better for becoming acquainted with. With this purpose before us, we now commend them to the earnest attention of the reader.

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* Philosophy of Health.

Professor de Morgan once remarked that before an individual was born it was 20,000 to 1 against his dying at a given age of a given malady; and this still is, and ever must remain true. The recognition of the fact, that all *must* die, constitutes the boundary of our knowledge, as to the individual catastrophe; and it is wisely ordained that it should be so. But scientific investigation, aided by and based upon well-founded records of the deaths of several centuries, have led to the discovery of a series of facts connected not only with the masses of the people, but with the various sections of the mass, which not only astonish us by the minuteness of their details, but astound us with their marvellous accuracy. By such means it becomes known (on the authority of Dr. Guy and Mr. Neison), that a *clergyman* who has attained 30 years of age, has *an expectation* of 35 more; that an *agriculturist* of the same age has an expectation of 40 years; while a *sovereign* can claim no more than 22 or 23 years. This last fact calls to our mind an observation of the learned Hufeland (of whom we shall hear more as this chapter proceeds), that while royalty confers upon its possessors all the advantages and enjoyments of the world, in the highest degree, it does *not* confer on them that which is to be esteemed as greater than all—the blessings of long life.

If it were necessary to furnish any instances of the individual uncertainty of life, and the thousand ills which human flesh is heir to, beyond those which, at a single thought, recur to our mind, we know of nothing better suited to the purpose than a chronological list of the Kings and Queens of England, from William the Conqueror downwards. And as it will serve to illustrate the deductions to be drawn even from the records of one class of individuals, where they extend over a sufficient period of time, we here give it, premising that the ages and causes of death are stated as accurately as possible on a hasty reference, and scanty materials at command.

Names.	Age at death	Cause or Manner of Death.	Names.	Age at death	Cause or Manner of Death.
William I	60	Rupture and fever.	Henry VII......	52	Consumption.
William II......	48	Shot by an arrow.	Henry VIII ...	55	Ulcerated leg.
Henry I	67	Surfeit of lampreys.	Edward VI......	15	Consumption.
Stephen	49	The piles	Mary	42	Small pox.
Henry II	55	Grief.	Elizabeth	69	Course of nature.
Richard I	43	Killed by an arrow.	James I	58	Ague.
John	49	Poison, or Grief	Charles I	48	Beheaded.
Henry III	65	Age.	Charles II	54	Apoplexy.
Edward I	67	Diarrhœa.	James II...... ...	67	Course of nature.
Edward II	43	Murdered.	Mary II	32	Small pox.
Edward III......	65	Course of nature.	William III ...	52	Fall from his horse
Richard II	33	Consumption.	Anne	49	Apoplexy.
Henry IV	46	Apoplexy.	George I...... ...	67	Paralytic attack.
Henry V.........	38	Pleurisy.	George II	77	Died suddenly.
Henry VI	49	Murdered.	George III	82	Course of nature.
Edward IV......	41	Ague.	George IV ...	68	Bursting of a blood vessel.
Edward V	12	Smothered.			
Richard III ...	42	Killed in battle.	William IV ...	72	Course of nature.

The perusal of the early portion of this list carries back the mind to a state of things happily long since passed away. In those times a crowned head was little else than an index to a sorrowing heart. Look carefully and see that six only of the entire number have died in the course of nature, or of old age—only one of the latter! Only one out of every five have died from what may here be called "natural causes." Three only have exceeded 70; and 67 seems an age fatal to royalty. Observers of the law of mortality, look at such a table, not with regard to individual cases, but as a whole. They find that the average "expectation" of our English sovereigns, at the time of their accession to the throne, was 33; they should, therefore, have died at the average age of 63; instead of which they have averaged only 52 years—the penalty of their royaity being the curtailment of their existence by a period of 11 years! With such facts before us, we need scarcely invoke the "immortal bard" to

"Tell sad stories of the death of kings:—
How some have been deposed, some slain in war,
Some haunted by the ghosts they have deposed.
Some poison'd by their wives; some sleeping kill'd;
All murder'd:—For within the hollow crown
That rounds the mortal temples of a king,
Keeps Death his court; and there the antic sits
Scoffing his state, and grinning at his pomp."
Richard II.

Happily, the causes which have brought about such results no more exist. Sovereigns no longer lead their armies to the battle-field, or mix themselves up in individual contentions and party strife. They are content to remain at home, secure in the hearts and affections of their subjects. Hence a great risk is removed, and life proportionately prolonged. It is found that the lives of royalty are infinitely safer in popular than in despotic,—in civilized than in barbarous—states. In Germany the reigns of thirty-eight emperors lasted, on an average, nineteen years; in Sweden, forty-one kings reigned eighteen years each; in Russia, fifty czars reigned, on an average, fifteen years; while, in England (bad as things *have* been), the average is twenty-two and-a-half years.* Taking all Europe, Newton was not far wrong when he stated that "Kings reign, one with another, about eighteen or twenty years."

Another illustration occurs to us, even, in some respects, of a more remarkable character. It is that of great *Statesmen*. They indeed have an average of about fifty-six years; but to trace their sad ends is to open up a perfect "chapter of horrors." We avail ourselves of a record already presented to the world: "Chatham fell fighting. His still greater son sank under the news of Austerlitz. Percival was assassinated on the threshhold of the House, his hand filled with papers, and a speech upon his tongue. Castlereagh's end was still more awful. Romilly, too, was a Statesman as well as a lawyer. Lord Liverpool was struck down in the midst of his duties. Canning fell suddenly while soaring in the pride of his might. Huskisson perished terribly in the midst of his former colleagues. Bentinck aspired to be a Statesman, and died in full health without a moment's warning. Sir Robert Peel (greater than all) died simply by a fall from his horse.* And, still more recently, the Earl Powis was accidentally shot by his own son. Such have been the incidents 'on the bloodless field of Statesmanship;' while our greatest Generals have lived hale and hearty, 'the heroes of a hundred fights,' to 'a good old age!'"

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* Dr. Farr in M'Culloch's British Empire.

The effect of "occupation" upon the duration of life has of late years engaged considerable attention; and although it is of course impossible to account for such fatalities as have befallen the class just referred to, a large mass of useful information has been obtained; and from time to time this will be extended and improved upon. It is to be seen that this influence becomes more marked as the observations extend to the "industrious classes." Dr. Farr, to whom this country is much indebted for the zeal and talent he has bestowed on all matters connected with the laws of health and sanitary progress, has given us (in the 14th report of the Registrar General), the result of his experience in this direction. Of twelve classes of persons observed upon, viz.: tailors, shoemakers, farmers and graziers, carpenters and joiners, butchers, persons engaged in wool, cotton, and silk manufactures, bakers and confectioners, inn and hotel keepers, grocers, miners, labourers, &c. (agricultural and otherwise) and blacksmiths, it was found that *farmers* were the longest livers. The proportions of deaths amongst them may be contrasted with the proportions of deaths amongst labourers at the following ages:—

Ages.	Farmers, deaths per 1000.	Labourers, deaths per 1000.	Difference,
85 to 45	9	13	4
45 " 55	12	17	5
55 " 65	25	29	4
65 " 75	55	68	13
75 " 85	148	174	26
85 " 95	324	418	94

The advantages in respect of health of the farmer over the labourer (remarks Dr. Farr), are considerable at every age after thirty-five; but, singularly enough, the mortality of the young farmers of the age twenty-five to thirty-five, is rather higher than the mortality of the young labourers of the same ages. The labourers constitute nearly *one-fourth* part of the male population of England; and their mortality is at nearly the same rate as that of the whole population, except in the very advanced ages.

The four classes which, on the whole, experience the heaviest rates of mortality in this kingdom are *miners*, *bakers*, *butchers*, and *inn* and *beer-shop keepers*.† Thus at the age of 45-55 out of every 1,000 *farmers*, twelve died; of 1,000 shoemakers, fifteen died; of 1,000 weavers and others employed in the manufacture of cotton, silk, and wool, fifteen died; out of an equal number of grocers, sixteen died; of blacksmiths, seventeen died; of carpenters, seventeen died; of tailors, seventeen died; of labourers, seventeen died; of *miners*, twenty died; of *bakers*, twenty-one died; of *butchers*, twenty-three died; of *inn and beer-shop keepers*, twenty-eight died—

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* The *Times*, July, 1850, on the death of Sir R. Peel.

† The effect of drunkenness on the duration of life has been ably exemplified in the *writings of Mr.* Francis G. P. Neison.

the mortality at that age among the whole population of England being at the rate of 18 in 1,000.

At every period of life, the mortality of the inn and beer-shop keepers, (of whom there were 55,315 in the kingdom in 1851) is in excess of the mortality of all the other classes except the *butchers*, at the age of 55-65, who died at the rate of 41 in 1,000; while the rate among the inn and beer-shop keepers of the same age was 39 in 1,000; the rate among the whole population being 30. The causes of this unusually heavy mortality, says Dr. Farr, deserve careful and extensive investigation. Many highly respectable men of the class lead regular lives, and are of steady habits; but others, exposed by their business to unusual temptations, live intemperately, and enjoy less quiet at night than the rest of the community. They are exposed also to zymotic diseases (fevers, &c.) by intercourse with large numbers of people.

The diseases to which various trades are subjected, long since commanded some attention. As far back as 1705 a book was published, the title of which tells its own story:—

> "A Treatise of the Diseases of Tradesmen, shewing the various influence of particular trades upon the state of health; with the best methods to avoid or correct it, and useful hints proper to be minded, in regulating the cure of all Diseases incident to Tradesmen, written in Latin by Berm. Ramazzini, Professor of Physic at Padua, and now done into English, 1705."

By way of preliminary the Author says,—

> "I hope all candid Physicians will excuse my imperfections upon the consideration that all trades are not practised in one city or county, there being divers trades, according to the variety of countries that may give rise to diseases. The shops or work-houses of Tradesmen are the only schools in which we can read any satisfactory knowledge of these matters; and out of these places I have endeavoured to pick whatever might best please the taste of the curious, and chiefly indeed to suggest such cautions as may serve to prevent and cure the diseases to which tradesmen are usually subject. When a physician, therefore, is called to visit one of the poorer and meaner sort of people, I would advise him not to clap his hand to the pulse as soon as he comes into a room, without enquiring into the circumstances of the patient, nor to stand, as it were, in a transient posture, to prescribe, where the life of man is concerned; but to sit down by the patient, let the place be never so sorry, and carefully interrogate him upon such things as both the precepts of our art, and the offices of piety require us to know The oracle of the divine head of our order informs us that when a physician visits a patient, he ought to enquire into many things, by putting questions to the patients and the bystanders. *When you come to a sick person*, says Hippocrates, *it behoves you to ask what uneasiness he is under. what was the cause of it, how many days he has been ill, how his belly stands, and what food he eats?* To which I'd presume to add one interrogation more—namely, *what trade is he of?*"

Here are his remarks upon the diseases of metal-diggers (miners), and the Registrar-General's investigations confirm their truth :—

> "Now the diseases that metal-diggers and other such like artificers are liable to, are for the most part a difficulty of breathing, phthisick, apoplexy, palsy, cachery, swellings of the feet, falling of the teeth, ulcers in the gums, pains and tremblings in the joints, so that upon the whole their lungs and brain are affected; but especially the lungs, *which suck in the mineral spirits along with the air*. and so receive the first onset; after which the same spirits, admitted within the verge of life, and mingled with the blood, corrupt and taint the natural temperament of the brain, and the nervous juice, from whence spring the tremblings, stupidity, and other disorders above mentioned. Hence it is that those who dig minerals in the mines are but short lived; and the women who marry them have the opportunity of matching several husbands; for Agricola is witness, that near the mines of the Carpathian mountains women have been known to marry seven husbands. . . . . And even in our time I reckon the mine-diggers are not much more handsome; for suppose they fed clean, and had good things about them, yet such is the influence of the *dark and impure place they draw*

> *their breath in, that their looks speak the very shades below*, even when they peep out into our purer air. In fine, let the mineral they dig be what it will, they are still liable to grievous diseases, that oftentimes elude all manner of cure, *even when proper things are prescribed;* and indeed it seems to be a doubtful case whether we ought to reckon it a good and pious office to prescribe physick to such wretches, and thereby prolong a miserable life."

In a work entitled *Practical Observations on the Diseases of the Cornish Miners*, by W. W. Taylor, Esq., M.R.C.S.E., we find the following:—

> " The miner is a short-lived man, and for this there are many obvious causes, in addition to hereditary diseases: the close places in which he has frequently to work, inhaling the noxious air, the various cold draughts he must encounter at those times, when all the pores of the skin are open from perspiration, and, *above all, the length of ladders he may have to climb*, and, to add to this, young men are very fond of racing up the ladders, striving who shall first reach the surface, a foolish pastime, and too frequently ends in incurable disease of the heart or lungs. From forty to forty-five is what may be called the critical period of a miner's life—if he passes the latter successfully he may probably live many years," &c.

We all know that the " vital tenure" exists on such conditions that it may at any moment cease. We have already seen that it varies with change of occupation; and we shall hereafter see that it varies also with change of locality. But in addition to, and independent of, these external causes, there are *natural laws* which produce changes, if not in every year of age, at least at certain well-defined periods. It is apparent to us all that it is *most insecure* in infancy and old age. At the age of puberty—before the period when the growth of the body is most rapid—before the age of its greater strength—before the age of greatest intellectual power—it is *least assailable by death.* The chance of living through a given year *increases* from birth to the age of 14 or 15. It *decreases* from that period to the age of 55 or 58, at a slightly accelerating rate. Afterwards the vitality declines much more rapidly. A careful perusal of the following Table will most fully confirm this fact:—

Out of one million male births there will die in the first year of life			180,492
At the age of	13	there will die of the same number	5,742
"	23	" "	15,074
"	34	" "	11,707
"	48	" "	14,870
"	58	" "	29,185
"	68	" "	61,741
"	78	" "	114,255
"	84	" "	178,180

In another place we shall shew the gradual decrements at all ages of life of a given number of people born at the same time. Our present purpose is to shew the relative mortality at the different epochs of human existence.

The course of individual life, indeed, presents such a chequered passage, and seems apparently so surrounded with dangers, at various recurring periods, that it may be, not inaptly, compared to a ship on a dangerous voyage. Having cleared its port, and with much difficulty escaped destruction on the various rocks and quicksands with which it was for a time surrounded, it proceeds gaily on its voyage. But, after a time, storms arise which greatly endanger its safety: by careful steerage, however, they are avoided. They occur again and again, but the vessel though shattered, holds out, until it is suddenly discovered that the worm (Time) has been at work, and has quietly effected the ruin which storms and breakers had failed to accomplish. Happily the voyage is nearly completed, and the break up of the good barque is looked upon rather as an event certain in the nature of things to happen, than as any special calamity. May the reader's passage through life be of this sort!

But now for the uses of the Table. The divisions in the ages represent the several storms (or periods) through which the *vessel of life* has to pass. The first sea (the first year of life) carries off nearly *one-fifth part* of the entire crew. The next (age 13) brings us to the "close of childhood"—here the mortality is smaller than at any other period of life. By the next "sail" we are brought to the entrance of the harbour of "manhood." The dangers here are very great, but, living them out, we arrive at "complete manhood" (age 34), when they are considerably less, and continue so for another period (age 48); when we "cross the line," and "life begins to decline in its meridian." Even here the dangers have not increased since we entered this latitude (age 23). By adjusting the compasses, and maintaining strict order aboard, she holds out pretty well the next stage: but the mortality has doubled. Now come the "dangers of the Cape," and the "Equinoxes." They tell their own tale. Eighty-four completes the circuit, and brings us, as regards mortality, nearly to the point from which we started. It is the period of second childhood—"sans teeth, sans eyes, sans taste, sans everything," and for all practical purposes the voyage of life may be considered as completed.

For the statistics in the above illustration we are indebted to Dr. Southwood Smith, who derived them from Mr. Finlaison's Report. It will be observed that they apply to the *male* sex only, "in which the development is more emphatically marked." The same divisions and comparisons do not, in all cases, apply to females, as will be hereafter explained. Mr. Edmonds, speaking of both sexes, has advanced a theory that there are *three* distinctly marked periods of human life: one from birth to about 8 years, when the mortality *decreases* 32½ per cent. annually; a second from the age of about 12 to 55, when the rate of mortality *increases* 3 per cent. per annum; and, lastly, from 55 and upwards, when it increases 8 per cent. Physiologists, however, assign *four* periods or divisions: the embryonic, immature, reproductive, and sterile ages;—the first terminating at birth; the second at puberty, which is achieved at 15; the third at 45, after which few mothers have children; and the last at 100 and upwards. The numbers in Great Britain, at the three latter periods, in 1851, were—males under 15, 3,754,936; of 15 and under 45, 4,811,172; of 45 and upwards, 1,851,235. Of females, the number under 15 was 3,703,144; of 15 and under 45, 4,984,299; of 45 and upwards, 2,080,224.

The popular English divisions of life are expressed in the language by several characteristic words, such as babe, suckling, infant, child, boy, girl, lad, lass, youth, maiden, and young, middle-aged, old, man, woman. These words are not used with so much precision as they might easily acquire; and some of them, derived from different sources, are used synonymously, while the latter terms often include the period which the earlier words especially designate. But (using a little force to make them express consecutive ages) it may be said that Great Britain, in 1851, contained

Babes and Sucklings under one year	578,743
Infants from one to five years	2,166,456
Children from five to ten	2,456,066
Boys from ten to fifteen	1,141,933
Girls from ten to fifteen	1,114,882
Youths from fifteen to twenty	1,051,650
Maidens from fifteen to twenty	1,048,404
Young men from twenty to thirty	1,830,588
Young women from twenty to thirty	1,939,906
Middle aged men from thirty to fifty	2,376,904
Middle aged women from thirty to fifty	2,482,382
Elderly men and women from fifty to sixty	1,452,516
Old, from sixty to seventy	948,570
Very old, being above seventy	596,080

The *Chinese* divisions or epochs of life are marked by decennial periods, or progress *decimally*. The age of 10 is called the "opening degree;" 20, "youth expired;" 30, "strength and marriage;" 40, "officially apt;" 50, "error knowing;" 60, "cycle closing;" 70, "rare bird of age;" 80, "rusty visaged;" 90, "delayed;" 100, "age's extremity."* Some of these designations are expressive enough; and in point of time correspond very nearly with our own. We may add, that the density of the population of China, in eighteen of the provinces enumerated in 1812, was 268 to each square mile; "which," says Sir John Bowring, "is considerably less than the population of the densely peopled countries of Europe." It is certainly less than we might infer from various published accounts of the "Empire of the Sun."

We now come to speak of the influence of LOCALITY upon the duration of life, and shall first begin with some of the European Countries. Out of 1,000 children born at the same time there will be living at the ages named in the first column, the numbers stated in the succeeding columns:—

Age.	Carlisle.	France.	Sweden.	Vienna.	Holland.
1	846	768	780	542	804
10	646	551	611	327	639
20	609	502	570	288	584
30	564	438	519	247	508
40	508	369	459	199	432
50	440	297	385	147	362
60	364	214	293	96	278
70	240	118	175	48	175
80	17	35	56	16	72
90	4	4	5	2	7

Holland, of the several places named, is seen to approach most nearly to England in point of salubrity; and at the two last ages it appears even more favourable. Vienna is seen to be by far the most unhealthy.

From these elementary observations other results are deduced, as, for instance, the following; some other countries being introduced:—

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* Sir John Bowring's letter to the Registrar General, vide "Statistical Journal," vol. xx., p. 42.

In England the annual rate of mortality is 23 per 1000.

In Denmark	„	„	23 per 1000	In Prussia	„	„	28 per 1000
„ Holland	„	„	24 „	„ Sardinia	„	„	30 „
„ France	„	„	23½ „	„ Austria	„	„	31 „
„ Sweden	„	„	24 „	„ Russia	„	„	36 „

They may be read thus: out of every 1,000 persons living at the commencement of any one year, the numbers stated die during that year; or they may be read thus:—

In England the annual mortality is 1 in 45.

In France	„	„	1 in 42	In Austria	„	„	1 in 33
„ Prussia	„	„	1 in 38	„ Russia	„	„	1 in 28

The latter figures are on the authority of Dr. Farr, than whom we have no greater; the former are taken from *Hygiène; or the Hand-Book of Health;* a recent publication of merit. A very slight difference in results is perceptible.

In 1841 the "measures of salubrity" were applied in the following instances, with the following results:*—

					Mean lifetime, or the expection of life,	
England, one death in	46	Mean age at death	29	years.	41	years.
France „	42	„	34	„	40	„
Sweden „	41	„	31	„	39	„
Metropolis „	41	„	29	„	37	„
Liverpool „	30	„	21	„	26	„
Surrey (ext.-metrop.)	52	„	34	„	45	„

These results apply to one year only, and that rather a favourable one than otherwise; so that any variation presented between them and those just given will be understood. It is satisfactory to see the results, where they apply, so closely approximate.

The importance of periodic tests of this kind is apparent if only for the purpose of checking the erroneous impressions which are formed in the absence of correct data. It is not very many years since Sir Francis D'Ivernois, "a gentleman who devoted many years to the elucidation of various phenomena relating to the law of mortality,"† presented to Mr. Rickman, under whose direction the population returns of this kingdom were entrusted, the following statement of the relative mortality of several countries with which he was familiar:—

England and Wales one death to 59 living.

Sweden and Denmark one to	48	living.	United States of America, one to		37	living.
Holland and Belgium „	43	„	Prussia	„	36	„
France „	40	„	Wirtemburg	„	33	„

And this has been reproduced in books of reference down to the present time. It appears to have been framed for the purpose of flattering English vanity; for, notwithstanding the improvements which have since taken place in the mortality of the kingdom, it gives the rate of decrement nearly twenty-five per cent. too favourable even for the present time, while, perhaps, with the exception of France, the decrements of the other places named are rather over than understated. Such exaggerated estimates tend to retard improvement by creating a feeling of contentment rather than encouraging a spirit of improvement. In another place we shall note how Mr. Rickman fell, or was led, into the erroneous belief that Liverpool was one of the most healthy towns in England, when the short space of a few minutes will show us that it is very nearly, if not wholly, the most unhealthy.

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* Vide 6th Annual Report of Registrar-General.

† Vide Porter's Progress of the Nation, 2nd edition.

The Registrar-General, in one of the earliest of his valuable series of reports, remarked that—

> "A comparison of the duration of successive generations in England, France, Prussia, Austria, Russia, America, and other States, would throw much light on the physical condition of the respective populations, and suggest to scientific and benevolent individuals in every country, and to the Governments, many ways of diminishing the sufferings, and ameliorating the health and condition of the people; for the longer life of a nation denotes more than it does in an individual, a happier life; a life more exempt from sickness and infirmity, a life of greater energy and industry, of greater experience and wisdom. By these comparisons a noble national emulation might be excited, and rival nations would read of sickness diminished, deformity banished, life saved, *of victories over death and the grave, with as much enthusiasm as of victories over each other's armies in the field, and the triumph of one would not be the humiliation of the other; for in their contention none could lose territory, or honour, or blood, but all would gain strength.*"*

The following figures speak to these points. England, in each case, maintains a noble ascendency. The mortality of Russia is indeed nearly double that of England. With respect to the general mortality of Europe, Dr. Southwood Smith says, "There is reason to believe that the mortality at present (1847) throughout Europe, *taking all countries together*, including towns and villages, and combining all classes into one aggregate, is one in *thirty-six*." In England, we have seen, it is only one in *forty-five!*

Next, we may look to the mortality of *Cities*.

In London the annual mortality is 25 per 1000.

In Berlin	25	per 1000	In Hamburg	36	per 1000
„ Turin	26	„	„ Moscow	38	„
„ Paris	28	„	„ Stockholm	39	„
„ Genoa	31	„	„ St. Petersburg	41	„
„ Lyons	33	„	„ Vienna	49	„

The reading of the Table is the same as that relating to countries.

London has been found to stand in the scale of health in the following proportions with the following places:—

With respect to Paris, as 40 to 32.

With respect to Leghorn as ...	40 to 35	With respect to Rome as	40 to 24
„ Naples as ...	40 to 28¼	„ Vienna as	40 to 22½

The yearly mortality in the latter city is nearly 5 per cent. of the whole population annually. The compiler of these last figures remarked that the average duration of life is greater, and the increase more rapid, in England than in almost any foreign city or state in Europe."† In 1841 the "mean age" of 45,507 persons who died in London was 29 years, and the mortality one in forty.

Mr. Henry Mayhew, in his famous work, the *Great World of London*, remarks of that city, that it may be safely asserted to be the most densely-populated city in all the world, containing one-fourth more people than there are in Pekin, and two-thirds more than Paris; more than twice as many as Constantinople; four times as many as St. Petersburgh; five times as many as Vienna, or New York, or Madrid; nearly seven times as many as Berlin; eight times as many as Amsterdam; nine times as many as Rome; fifteen times as many as Copenhagen; and seventeen times as many as Stockholm.

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* Fifth Annual Report, p. 19.

† "Health and Habits of the People." By John Hogg, M.D.

Here is a more miscellaneous Table, which does not speak so well for London as for some other cities; but it will be noticed that the observations on which it is based extended over a very short period.

	Population died Annually.
In Stockholm, on an average of 6 years	1 in 19
„ Vienna	1 in 20
„ Edinburgh	1 in 20
„ London	1 in 20¾
„ Rome	1 in 21⅓
„ Amsterdam	1 in 22
In Northampton, on an average of 6 years	1 in 26½
„ Berlin	1 in 26⅓
„ Sweden	1 in 35
„ Vaud, Switzerland	1 in 45
„ Ackworth, Yorkshire	1 in 47
„ Madeira	1 in 50

Between London and Ackworth in Yorkshire a difference of more than 100 per cent. in the average of mortality is observable. But to meet such facts as these, Mr. Milne, in his excellent work on annuities, has given us the following solution:—"It is well known that the inhabitants of large towns, from their sedentary habits, their pernicious occupations, their vices, and the want of cleanliness amongst those of the lowest class, are subject to greater mortality than those who reside in small towns and villages, or in the open country; and this is one of the causes of the difference that is observable between the rates of mortality in the different counties;" and, he might have added, in different parts of the same county.

But if we are satisfied with Mr. Milne's solution of the causes of different rates of mortality in different counties, or extend it, as we have done, to different parts of the same county, what shall be said to the following figures giving the variations to which the different *classes* of inhabitants are subjected in *the same town*? They deserve most serious consideration:—

	The Gentry live.	Tradesmen.	Labourers.	General Average.
In Rutlandshire ...	52 years.	41 years.	38 years.	43 years 8 months.
In the town of Truro	40 „	33 „	28 „	33 „ 8 „
„ Derby	49 „	38 „	21 „	36 „ 0 „
„ Manchester ...	38 „	20 „	17 „	25 „ 0 „
„ Bolton	34 „	23 „	18 „	25 „ 0 „
„ Bethnal Green ...	45 „	26 „	16 „	29 „ 0 „
„ Leeds	44 „	27 „	19 „	30 „ 0 „
„ Liverpool... ...	35 „	22 „	15 „	24 „ 0 „

Here is food for reflection! Manchester and Bolton show a general average duration of life amongst all classes of *only a little better than half that of Rutlandshire.* Liverpool is still worse! Surrey, which is not included in the Table, gives the general average duration of life for all classes at 45, which is higher than any of those shown. It is an ascertained fact, that of 100,000 infants born alive, in Surrey, more than half (50,000) are alive at the age of 50; while out of the same number born alive only 41,000 live to the age of 50 in the metropolis; and but 26,000 (little more than half the number of Surrey) in Liverpool![*]

But as a more extended, and decisive, example of the relative effects of town and country life upon the mortality returns, the Registrar-General, a few years since, took two districts—one country and the other town—sufficiently extensive in area and population to secure the proper operation of the law of mortality, and recorded his observations upon them. The country district comprised the counties of Essex, Norfolk, (except Norwich), Suffolk, Sussex, Gloucestershire (except Bristol and Clifton), Herefordshire, and Westmorland, comprising an area of about 9,352 square miles; the population being in 1841, 1,700 484. The town district comprised Birmingham, Aston, Bristol, Clifton, Bath, Manchester, Salford, Liverpool, West Derby (adjoining Liverpool), Cambridge, Carlisle, Derby, Dudley, Exeter, Leeds, Leicester, Maidstone, Newcastle-on-Tyne, Sunderland, Northampton, Nottingham, Sheffield, Stoke-on-Trent, Wolstanton, and Wolverhampton, standing upon 666 square miles, and having a population of 1,883,693. The deaths in the first district were 132,116; and in the latter 205,966. Striking off 20,000 for the excess of the population in the second over the first district, the result shews the difference in deaths at the same time, and out of the same population, varying only in their location, viz.:—

Deaths in town districts	185,966	
„ Country districts	132,116	
Difference against town districts	53,850	or 40·7

The deaths in 1840 shewed the annual mortality to be—

In town districts out of every 1,000,000 living	27,078	
Country districts „ „ „	19,300	
Difference against town districts	7,778	or 40·2

The population in the country districts being 199, and in the town districts 5,108 to the square mile.[†]

The annual mortality in *London*, except in periods of great epidemics, is at the rates following:—

Children and young persons under 20 years of age	81 in 1000
Men and women, from 20 to 40 „	10 in 1000
„ „ 40 to 60 „	23 in 1000
„ „ 60 to 80 „	72 in 1000
„ „ 80 and upwards „	224 in 1000
Average at all ages	25 in 1000

But the various districts of London vary almost as much between themselves as London varies from the kingdom generally. In the fifth annual report of the Registrar-General some comparisons are drawn between the expectation of life in the opposite districts of St. George's, Hanover Square, and Whitechapel. The expectation was computed on the population and deaths of 1841, when the mortality was low in both districts. At the age of 20 the *male* expectation of life in St. George's was found to be 39 years and 6 months. In Whitechapel, at the same age, 33 years and 6 months, or just six years difference. The *female* expectation, at the same age, in St.

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[*] Fifth Report of Registrar-General.

[†] Ibid.

George's was about three years greater than the *male* expectation, and in Whitechapel about four years greater. At the age of 50 the *male* expectation in St. George's was 18 years and 8 months, and in Whitechapel 15 years and 11 months—difference nearly 3 years. The *female* expectation, at the advanced age, was only a few months greater than the male population.

The Registrar-General has noted that the Eastern Division of London is subject to a rather higher mortality than the Southern (which lies south of the river), *except in cholera years,* when the epidemic, taking advantage of a lower level, causes the mortality to rise higher on the south side. The years 1850 and 1851, in which the mortality was nearly the same in the two divisions, furnish the only instances within nine years which can be adduced against the operation of this rule.

In a work published a few years since by Mr. Cyrus Redding,—if we remember rightly, a *History of Cornwall,*—we saw it remarked, that in the southern counties of England the majority of deaths take place in the *March* quarter—the minority in the *September* quarter—and that *the same rule held good with respect to births.* That in the northern counties, as Cheshire, Lancashire, the Ridings of Yorkshire, Durham, Cumberland, Northumberland, and Westmorland, the births are uniformly most in the *June* quarter; and that in the five north midland counties they are nearly equal in both these quarters. This observation has recurred to us at the last moment, and we have no opportunity now of testing its truth. The observer asks "Can this have any relation to the atmospheric temperature?"

It will conduce to the understanding of our subject, and also facilitate reference, if we now arrange our facts under the several heads to which they more particularly relate. The first chapter will comprise data relative to the *Births and Birthplaces of the people;* the next *to Marriage and its Influences;* while the third division will speak of *Deaths, their number and causes.* We shall then present some interesting facts on the *laws and increase of Population,* with some remarks on the *census:* to be followed by a paper on *Longevity.* As considerable portions of this information are drawn from the Report of the Census Commissioners in 1851, and other public documents, we shall not encumber our text with authorities to the extent we have thought it desirable to do in other divisions of the book

CHAPTER II.

BIRTHS AND BIRTH-PLACES OF THE PEOPLE.

The births in Great Britain are about 600,000 per annum, and exceed the deaths by nearly a *quarter of a million* annually. During the 13 years from 1839 to 1851, both inclusive, there were born in England and Wales 3,634,235 males, and 3,465,629 females; consequently 104,865 boys were born to every 100,000 girls; or speaking in smaller numbers, 105 boys were born to every 100 girls. But to every 100,000 females *living* during those years there were only 96,741 males—being 105 females to every 100 males, or the exact reverse of the proportion of births. In France the proportion is 17 boys born to 16 girls; and in Russia, 13 boys to 12 girls. The proportion of males to females born *is smaller amongst illegitimate than amongst legitimate children.*[*]

The births registered in England, are, in proportion to the population, *one-seventh* part more numerous than in France; and *one-seventh* part less than in Prussia. To every 3,525 inhabitants, 100 births are annually registered in France; 113 in England; 133 in Prussia; 136 in Austria; and 151 in Russia.[†] In England the proportion of twins to ordinary births is about 1 in 100; triplets about one in 6,000. One Mother dies in child-bed to every 200 Children born.

In the year 1851 the births registered in England and Wales were 615,865; of these 573,865 were the children of *married*, and 42,000 of *unmarried* women. The number of married women of the child-bearing age, viz.—15 to 55,[‡] was returned at 2,553,894 in that year; and of unmarried women, including widows as well as spinsters, 2,449,669. So that the above figures give to each 1,000 of married women 224 children born annually; and to each 1,000 *unmarried women*, 17 *children born annually!* Upon which the Census Commissioners remark, that "186,920, or 1 in 13 of the *un*married women must be living so as to contribute as much to the births as an equal number of married women!" From these, or similar statistics, it has been calculated *that one out of every fifteen* Englishmen and Englishwomen now living was born illegitimate!

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[*] Milne on Annuities, p. 493.

[†] 6th. Annual Report of Registrar General.

[‡] The Mothers of all the children that are born in the country are between the age of 15 and 55, and the greater part of them are between the ages of 20 and 40. The English schedule is defective, as it does not show the age of the Father and Mother at the birth of the child; but it may be inferred from the Swedish returns that not more than 1 in 8 women who bear children is under the age of 20 or above the age of 40."—*Registrar General.*

Again in 1853, the births were 612,391; of these 39,760, or *six and a-half per cent. of the whole number were born out of wedlock.* Some pains have been taken to ascertain the districts, in which the greatest number of illegitimate births take place. The following figures are curious. In London, so much abused on the score of immorality, the illegitimate births were only four per cent.; while in Preston, in Lancashire, no less than ten per cent. were of this class. And even in the quiet little town of Stamford, in Lincolnshire, the proportion for the year named stood at 420 legitimate to 40 illegitimate, being very nearly ten per cent. But the following passage from the 14th annual report of the Registrar General takes a broader view of the subject:

> "Excluding London from view, as the returns are probably imperfect, it may be inferred, that, generally, the unmarried women in the counties South of the Thames, comprising the descendents of the old Saxon population, *have few illegitimate children:* Wales stands next in the scale: the West Midland, the North Western, and the South Midland counties, covering the area of the ancient Mercia, present less favourable results; while in Yorkshire, the Northern counties, the North Midland counties, and particularly the Eastern counties, covering the area of the ancient Danish population, the number of illegitimate children is excessively greater."

The seasons appear to have some influence on the births, as was remarked by Graunt two centuries ago.* The numbers registered in the first two quarters of 1851 were 157,286 and 159,073, whilst the births, in the last two quarters, were 150,594 and 148,912. The illegitimate births in that year were very equally distributed over the year, and amounted to 10,802, 10,526, 10,256, and 10,416 in the four quarters. The deaths amongst illegitimate children at the younger ages, are very much more numerous than amongst legitimate children.

It seems almost a universal law, that amongst *illegitimate* children the proportion of *females* is greater than amongst *legitimate* children. The following Table has been compiled in support of that view. The actual number of males born is greater than the females in every instance, as already explained; but the proportion of males to females is less with illegitimate than legitimate births, thus:—

	Legitimate Males to 1000 Females.	Illegitimate Males to 1000 Females.		Legitimate Males to 1000 Females.	Illegitimate Males to 1000 Females.
Prussia (1820-34) ...	1,060	1,031	East Prussia & Posen	1,058	1,036
France	1,067	1,048	Paris	1,038	1,034
Naples (1819-24) ...	1,045	1,037	Geneva (1814-33) ...	1,090	1,015
Austria	1,062	1,042	Amsterdam	1,050	1,088
Wirtemburg	1,060	1,035	Leipzig	1,062	1,059
Sweden	1,047	1,031	Montpellier (1772-92)	1,071	1,008
Bohemia	1,057	1,004	Frankfort-on-Maine	1,028	1,078
Westphalia (1809-11)	1,047	1,004			

The only two exceptions in the above Table being Amsterdam and Frankfort. Various theories have been propounded to account for this fact; and in our opinion none of them are very satisfactory.

The difference between male and female mortality during infancy is very surprising, and not easily accounted for. Out of *one million* male births there will die during the first year 180,492, (see a Table subsequently given), while out of the like number of female births there will be but 154,705, giving a difference of 25,787 in favour of the females! Differences of this character exist through the whole period of male and female life, although not always on the same side. These were examined into by the Registrar-General in his sixteenth annual report. Out of 1000 *boys* there die annually, during the first five years, 72·75 (72¾), while out of the same number of *girls* only 62·50 (62½) die. In the next stage of life, namely, between the ages 5 and 10, out of the same numbers, 9·12 *boys* and 8·93 *girls* die. A change takes place between the ages of 10 and 15, for then 5·16 *boys* and 5·40 *girls* die. The mortality of both sexes then increases, and the women, up to the age of 35, die in rather greater proportions than men. After the age of 45 the mortality of men is considerably higher than that of women. The mortality of 73 in 1000, as above, is nearly three times the average rate of the whole population, while the mortality of 5 in 1000, as between the ages of 10 and 15, is only one-fourth or one-fifth of the general rate.

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* Vide p. 16.

There can be no doubt that a considerable per centage of the deaths amongst infants arise entirely through the ignorance and carelessness of their parents—more particularly of their mothers. Improved education will do much to remedy this; and the sanitary improvements now going on in all large towns and cities, have already had some influence in that direction. The following confirmatory remarks from so high an authority as the Registrar-General, should be carefully considered:—"During this period, when they are at home and under the care of the mother, and encounter the contagious diseases which beset the beginning of life, their safety depends very much upon the power of the parents to supply them with food and raiment—*upon the mother's watchfulness and cleanliness*—upon the air they are doomed to respire in imprisoned courts and alleys, or in the fresh open atmosphere of healthy country districts."

There are also two other causes which have exercised, and are still exercising, considerable influence in increasing the mortality among infants—these are the *adulterations of food*, and the system of *drugging* them, which prevails so much in the manufacturing districts—the latter more especially of the two. The authority from which we quote should carry both weight and conviction. Mr. Thomas Wakley, the Coroner for Middlesex, and proprietor of the *Lancet* (a medical publication), writes in the *Times* of 30th of July, 1856:—

> "I continue to be more and more impressed with the conviction that the public, and especially the juvenile portion of it, suffer greatly from the practice of adulteration which so generally prevails."

We have also the additional testimony of Mr. Bianchi, that a great deal of the excessive mortality in London, amongst children, may be ascribed to *impure milk*, which is there retailed. On the second evil named, Mr. William Lee, one of the superintendent inspectors under the Board of Health (from whose able reports we shall hereafter frequently quote), says:—

> "The practice of giving opiates to infants is very prevalent in towns, especially where females are employed in the staple manufactures of the place, as is the case in Loughborough. *I fear the evil is rapidly increasing*, and it should be generally known that the sleep produced by the various forms of anodyne, infants' mixture, Godfrey's

cordial, &c., would be more properly designated *stupefaction*. Many affectionate mothers who would die to protect their offspring from external injury, destroy the lives of their helpless infants by the administration of these pernicious mixtures; and even when the child survives the period of infancy, *it grows up too often with a constitution enfeebled, and consequently predisposed to disease.* There is reason to fear that few, if any, who have been habitually drugged in infancy, live to enjoy the average degree of health during the ordinary period of existence." *

The following calculation of the Census Commissioners of 1851, shews the influence of *bachelorism* and *old-maidism* in retarding the progress of the population, by keeping down the births:—"The British population contains a great reserve of *more than a million unmarried men, and more than a million unmarried women*, in the prime of life, with as many more of younger ages; and if *the whole of the population were married, the births in Great Britain would, instead of seven hundred thousand, be about sixteen hundred thousand annually*, if they bore the same proportion to the wives at different ages as they do now!"

An inquiry into the *birth-places* of the people furnishes some curious facts. Above 82 per cent. of the people of Great Britain were born in England and Wales; 13 per cent. in Scotland; 3½ per cent. in Ireland; $\frac{6}{10}$ per cent. in the Islands of the British Seas; $\frac{2}{10}$ per cent. in the British Colonies; about $\frac{3}{10}$ per cent. are subjects of Foreign states; of the 17,927,609 inhabitants of England and Wales 761,953 (=4½ per cent., or 1 in 24) were born beyond the limits; namely, 130,087 in Scotland; 13,753 in the Islands of the British Seas, and 519,959 in Ireland, and the rest elsewhere. About $\frac{7}{10}$ per cent. of the population of England and Wales were born in Scotland; 3 per cent. in Ireland. Of the 2,888,742 inhabitants of Scotland, 266,022 (=9¼ per cent., or 1 in 11), were born beyond its borders; 46,791, or 1⅝ per cent., in England and Wales; and 207,367, or 7 per cent. in Ireland.

Speaking of *London* only, 30,401 of its inhabitants in 1851 (taking all ages) were born in *Scotland;* 2,211 in the Islands in the British Seas; 108,548 in *Ireland;* 11,136 in the *British Colonies.* 29,352 of the then residents of London were born in *Foreign States* in the following proportions: 10,237 in *Germany;* 7,217 in France; Belgium had sent 703 of her people; Holland 1,930; Denmark 292; Norway 322; Sweden 335; Russia 1,169; Persia 7; China 78; Arabia 10; Egypt 62. Switzerland had sent 835 of her natives; Spain 564; Portugal 376; Italy 1,604; Greece 177; Turkey 139. From America, the United States sent 1,054 citizens; Mexico 30; Brazil 45. Nearly all the *English counties* have contributed largely to the London population; in the aggregate 588,000 , or about *one fourth;* while 1,457,000, or seven-twelfths of its population, were born within its limits.

The *births* in London in 1855 only exceeded those of 1854 by 260, being a remarkably small increase. "This," says the Registrar General, "is perhaps *the effect of the high prices of food*, and of war, which removes married men from their homes, to occupy garrisons and encampments, to man the fleets, or as workmen to furnish the mighty equipments of sea and land."

We now come to a topic intimately connected with the births of the people.

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* The five years ending in *1860* show a total of 1,130 inquisitions on the bodies of children under two years of *age*, *all of* whom had been murdered. The average is 226 yearly. *Note, 1866.*

"The change," says Dr. Southwood Smith, "that has taken place in the condition of lying-in-women during the last century in all nations of Europe cannot be contemplated without astonishment. The mortality of lying-in-women in France, at the Hotel Dieu of Paris in 1780, is stated to have been one in fifteen. In 1817 for the whole kingdom of Prussia, including all ranks, it was one in 112. In England in the year 1750, at the British Lying-in-Hospital of London, it was 1 in 42; in 1780 it diminished to 1 in 60; in the years between 1789 and 1798 it further decreased to 1 in 288; in 1822, at the Lying-in-Hospital in Dublin, it was no more than 1 in 223; while during the last 15 years (written previously to 1847) at Lewes, a healthy provincial town, out of 2,410 cases there have been only *two deaths*, that is, one in 1,205." He adds "There is no reason to suppose that the mortality in the state of parturition is less at Lewes than in other equally healthy country town in England." By the fifth annual report of the Registrar-General, we find 3,007 mothers died in childbed in the year 1841. On an average, eight died from childbed every day of the year. 11,722 English women died in childbed (including miscarriages and abortions) in four years, namely, 2,811 in 1838; 2,915 in 1839; 2,989 in 1840; and 3,007 in 1847. *The mortality was one death to* 171 *births registered.*" The Registrar adds, "The returns under this head were less specific than could be desired." They seem sufficiently specific to shew that while the mortality from this cause is greater than Dr. Smith seemed to anticipate, still that it is far more favourable than it was during the past century, and this may be attributed entirely to the improvements in medical science.

Among the Hebrews and the Egyptians midwifery was practised by women only. In France the same practice is very much followed out. There the "sages-femmés," as they are called, go through a regular course of instruction, theoretical and practical. Madame Boivin and others have greatly distinguished themselves there by their writings, and contributed not a little to the progress of their art. Mr. Hoffman states that the Prussian Government supported in each of the eight provinces, schools of midwifery, which, in 1837, had furnished the county with 11,155 midwives, examined and passed by the medical boards; and Dr. Farr adds, "no one who has reflected upon the subject, and, certainly, no one who has a practical acquaintance with it, will contend that the annual deaths [in England] of 3,000 women in childbirth, and of 13,350 boys, and 9,740 girls, in the first month after delivery, or the sufferings and deformity of many who escape with life, are natural and inevitable. Admit that the lives of a thousand, of five hundred, or of one hundred of these mothers might be saved, and that many more might be rescued from injuries and pains which disable, and never leave them; and, assuredly, no apathy, no false sentiments of delicacy, will prevent those who have the public health at heart, from giving the subject the most attentive consideration."[*]

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[*] Fifth Report of Registrar-General.

CHAPTER III.

MARRIAGE, AND ITS INFLUENCES.

About 150,000 marriages are solemnized in England and Wales every year—the number increasing with the increase of the population, and occasionally fluctuating from causes which will be noted as we proceed. In 1841 the marriages were 122,496, while in 1851 they were 154,206, shewing an increase of no less than 31,710 in ten years, being at the rate of 3,171 per annum. During the three years 1850-1-2, the marriages numbered 465,732, and their classification was as follows:—Between bachelors and spinsters, 380,721; between bachelors and widows, 19,896; and between widowers and widows, 22,200. In 1851, 58 out of every 1,000 bachelors living at the commencement of the year, married during the year. The proportion varied in different districts from 32 per 1,000 in Cumberland, and 36 in Herefordshire, up to 82 in the Surrey portion of London, which fact led a London wit to remark that mothers, with seven, or any greater number of daughters, should take lodgings over the water!

The average age at which marriages take place in Great Britain is 25 years. The average age of wives in Great Britain is 40½ years; of husbands 43 years;—the husbands averaging 2½ years more than the wives. The conjoint lives of husband and wife continues about 27 years on the average. But if the husband be 40 at the time of marriage, and the wife only 30, the average is only 21 years. In the former case the widows survive their husbands 10 years, the widowers their wives nine years; in the latter the widows survive 13 years, and the widowers live five years after the death of their wives. *About* 80 *out of every* 100 *married pairs have children living.* The average of the last ten years is one marriage annually to every 119 persons living.

Human life, says the Registrar-General, is naturally enough divided into two periods; the first terminates at the age of 25, *which is now the average age of marriage in England;* the second period extends from that age to senility, or to the catastrophe of death. In the Roman law, 25 was the age of majority, as it is in the present French code for males. The number of persons at the last census in Great Britain under the age of 25 was 11,573,377; of the age of 25 and upwards, 9,611,633.

By the common law of England, all persons under the age of 21 are infants: 21 is the age of majority; and in the five following years of age, half of the marriages in England are now contracted. The number of minors in Great Britain, at the census of 1851 was 9,985,133; the number of 21 years and upwards, was 11,199,877.

Males at 14, and females at 12, may consent to marry, but cannot legally marry until the age of 21, without the consent of their guardians. And the English law regards 14 as the age at which a person is competent to distinguish right and wrong;-under 7, children are irresponsible; between the ages of 7 and 14 they are in some cases responsible. The number of persons of the age of 14 and upwards in 1851 was 14,167,871; of 14 and under 21, the number was 2,967,994; of 7 and under 14, the number was 3,260,188.

The number of *husbands* in England and Wales, at the time of taking the census, in 1851, was 2,958,564; of *wives*, 3,015,634. The number of husbands in Scotland was 410,349; of wives, 422,296: the difference in the numbers being occasioned by the absence of the husbands from England as sailors, soldiers, merchants, &c. *Thirty-four* in one hundred men, and *thirty-three* in one hundred women of all ages in England and Wales, are married; while in Scotland thirty in one hundred *men*, and only twenty-eight in one hundred *women* are married. Taking Great Britain through, thirty-three in every one hundred males are married, and thirty-two in every one hundred females. Of one hundred young men of the ages from 20 to 25, both inclusive, twenty are married in England and Wales, sixteen in Scotland; and the disparity diminishes, but the smaller proportion is on the side of Scotland until the age of 65, when the proportional numbers of men living in the married state exceed in Scotland the proportions in England. Of two hundred men of the age of 80 and upwards, thirty-six are husbands in England, and forty-two in Scotland.

The number of widowers in Great Britain, in 1851, was 382,969, and of widows 795,590, In England and Wales seven, in Scotland eight, in the islands of the British Seas nine, in one hundred of the female population are *widows;* and four in England and Wales, three in Scotland, and three in the Islands,out of one hundred males of all ages, are *widowers.* There are proportionately more widows, and fewer widowers,in Scotland than in England, which may perhaps be accounted for by widowers marrying again *more*, and widows *less*, frequently in Scotland than in England. At the ages of 40 to 60 (meaning the ages ranging between these two extremes) *sixteen* in England, and *nineteen* in Scotland, out of one hundred women of that age,are widows. At 60 to 80, *forty-five* in England, and *forty-seven* in Scotland are the proportions; which at 80 to 100 ascend to *seventy-six* in England, and to seventy in Scotland; where old widows probably experience a high mortality, as until lately the provision for the sustenance of the aged poor was more imperfectly organized in Scotland than in England.

Of women of the age of 20 and upwards, thirteen in one hundred are *widows* in England, fifteen in Scotland;-while of one hundred men of that age, seven are widowers in England, seven in Scotland. The husbands are to the widowers nearly as nine to one in England;

the wives to the widows nearly four or five to one; or more exactly, as one hundred, to eleven *widowers*, and twenty-one *widows* respectively. In Scotland the husbands are to the widowers as nine to one; wives to the widows, only as three or four to one. The proportion of widows, to single women of the age of 20 and upwards, ranges in the counties of England from 11 to 14½ per cent. In the counties of Sussex, Bedford, Stafford, Nottingham, Derby, and the West Riding of Yorkshire, the proportional number of widows is less than 12 per cent., and little exceeds *one in eight women;* in Cornwall, Hereford, Northumberland, Cumberland, and North Wales, it exceeds fourteen per cent., and *one woman in seven is a widow.* The other Counties occupy intermediate stations.

In *London,* the widows in one hundred women exceed fourteen; and generally the *healthiest districts contain the smallest proportion of widows.* The healthier districts of Surrey are singularly distinguished; for Reigate had less than ten widows in one hundred women. In these districts, the wives are to the widows, and perhaps the united life of marriage to the disjointed life of widowhood, as seven to one; whereas in St. Olave's Southwark, the wives are to the widows, *only in the proportion of three to one.*

The widows exceed 15 per cent. in the following districts: Canterbury, Bury St. Edmond's, Yarmouth, Salisbury, Plymouth, Stoke Damerel, Truro, Falmouth, Helston, Redruth, Scilly Islands, Bath, Bristol, Hull, Whitby, South Shields, Tynemouth, Whitehaven, and a few other districts. The great number of widows in the ports indicates the loss of great numbers of men at sea, of whom little other record is left than these relicts.

In the Counties of Scotland, the proportion of widows to one hundred women of the age of 20 and upwards, ranged from eleven in Selkirk to $16\frac{8}{10}$ in Bute; in Renfrew it was 16; Lanark 15½; Edinburgh 16; Forfar 15; Aberdeen 15; Argyll $15\frac{9}{10}$. In no other county did the proportion exceed 15. If, however, we compare the widows with the wives, it is found that in Caithness, in the Orkneys, and Shetlands, and in several counties, the wives are to the widows as little more than three to one. In Edinburghshire and Bute the widows are in a still higher proportion.

The Census Commissioners remark, in connection with the foregoing facts, that the number of widows and widowers "stand like sad monuments of our mortality, of our ignorance, negligence, and disobedience of the laws of Nature, and as memorials, at the same time, we may hope, of the sufferings from which the people may be delivered by sanitary discoveries and observances."*

Dr. Milne, the learned compiler of the Carlisle Table of Mortality, had noted, many years previously, the great proportion of widows to widowers, and entered into the following speculation as to the probable cause or causes. He says,—

"1st. Men are in general more *intemperate* than women. 2nd They are exposed to greater hardships and dangers. 3rd. Widowers, perhaps, in general have greater opportunities of getting wives, than widows have of getting husbands. 4th. . .

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* Census Report.

> 5th and lastly, The constitutions of males, as fitted for more violent and laborious exertions, are firmer and more robust than those of females; their muscular and nervous fibres may therefore be supposed to become stiff, rigid, and incapable of performing the functions necessary to health and life sooner than those of females, both on account of their original texture, and the friction which must necessarily occur from laborious exercise."

The consideration of the foregoing, and similar facts, led to other and more philosophic, if not more serious reflections, on the part of the Census Commissioners :—

> "The passions and affections of men," they say, "are governed by laws as certain as those of the heavenly bodies; but it is not true—as the phenomena are complicated—that the acts of particular individuals can always be predicted; and in discarding this notion we get rid of the vulgar error; but it is true that the acts of numbers of individuals can be predicted with sufficient certainty for practical purposes; for the marriage returns, and those enumerations in conjunction with the Life Tables, furnish the means of calculating the chances that a man or woman, young or old, and unmarried, will marry before, in, or after a given year of age, of calculating the *probability* of remaining a spinster or a bachelor, or of being a widower, or a widow; and these calculations will serve, not merely to gratify idle curiosity, but to guide the course of men's lives, to make provisions for children who marry, as well as for those who do not marry, and to direct the establishment and conduct of social institutions which may mitigate the calamities of premature death."*

Professor de Morgan has offered the following remarks upon the causes of fluctuation in the number of marriages, which is observable on looking over the returns for a series of years, and has also offered a solution of a circumstance also noticeable, that in years which show the greatest number of births, the Mortality Tables also show a diminution in the deaths. This will be rendered more apparent by a Table presently to be given; but here is the Professor's dictum, delivered with his usual clearness :—

> "When provisions are cheap, or wages high, when, in fact, it is easy to maintain a family, marriages are more frequent, and are contracted at earlier ages. The same abundance of nourishment which tends to production, also tends to preservation, both of parents and children; the consequence of which is, that a rapid increase of population is often accompanied by a diminution of the proportionate mortality. On the other hand, from contrary causes, a diminution of the rate of population may be attended by an increase of the mortality."

The influence of *marriage* on the probable duration of life opens a curious field for speculation. That it has an influence, more than one writer bears testimony; and statistics have been adduced in support of the theory. Voltaire has asserted, that the majority of persons who commit *suicide* are *unmarried*, adducing this circumstance as an evidence that the wedded state is favorable to the prolongation of life. Hufeland also entertains the existence of such a theory ; and Deparcieux reports, " that people live longer in a state of matrimony than celibacy—the number of married men who die after the age of 20 being nearly *one-half* less than the number of bachelors dying at the same period; and for 43 benedicts or widows who reach the age of 90, there is only one-seventh part thereof of single men found to attain the same age ;" and this effect upon the disposition in life, is even more important as it applies to females than males. It will be seen that the number of unmarried females who die after the age of 20, bears a quadruple proportion of excess to married women who die at the same period.

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* On this passage was founded the *Female Provident* Office, for securing annuities to unmarried females, &c., &c.

Dr. Casper, of Berlin, who has paid considerable attention to this point, bears out the above views. M. Odier also has made observations, and produced the following Table:—

	A *married* female has to live		An *unmarried* do.		Difference.	
	years.	months.	years.	months.	years.	months.
At the age of 20	40	4	30	8	9	8
25	36	0	30	6	5	6
30	32	5	28	11	3	6
35	28	11	26	4	2	7
40	25	7	23	5	2	2

Or to illustrate the subject in a more comprehensive and striking form, a female now aged 25, by marrying extends her probability of life by 5½ years![*]

By way of qualifying the above Table, we quote the following remarks from Dr. Milne's work on Annuities, which appear very reasonable:—

> "It is obvious that the best organized, and most vigorous individuals of both sexes, but especially females, are the most likely to marry; and that but a small proportion will be married of those (particularly of females) who labor under any infirmity that tends materially to shorten life. The married, therefore, will, upon an average, be a *selection of such lives from the general mass of the population as would have been the best, whether they had married or not;* and it is very difficult to determine what effect marriage may have had in improving them."

Iceland appears to be especially remarkable for the productiveness of its marriages. Dr. Schleisner, in the *Statistical Journal* of March, 1851, says, "Almost all the foreigners who have travelled in Iceland have mentioned the extraordinary fecundity of the nation as something remarkable. It is noticed that marriages with 20 children and upwards occur frequently. But from such single facts, a general rule for the fertility of the nation cannot be deduced. I have tried to find it out. The fertility of a nation is generally indicated by the proportion of the children born to the whole population. Dr. Kayser, professor of statistics at the University of Copenhagen, has made a correction in that test. Instead of fixing the births in proportion to the whole population, he fixes them in proportion to the whole number of women at the fertile age, which, for the northern countries, is between 20 and 50 years." He then enters upon a comparison of the results obtained by Dr. Kayser for Denmark, and those by himself for Iceland: the former being founded on a series of years, partly from 1830-44, and partly from 1827-44; the latter founded on the 10 years 1838-47. The following is an abstract only:—

	Proportion of births to 100 women between 20 and 50.	Proportion of legitimate births to 100 *married* women between 20 and 50.	Proportion of illegitimate births to 100 *unmarried* women between 20 and 50
Denmark ...	15·2 per cent.	23·6 per cent.	3·77 per cent.
Iceland ...	16·9 "	28·2 "	4·8 "

The proportion of boys born to girls, is 105·7 per cent. in Denmark, and 106.0 in Iceland; and out of the whole number of births, 1·23 (1¼) per cent. are *twins*, and ·015 per cent. (1 in about 600) are triplets in Denmark, while 1·43 (1½ per cent.) are twins, and ·095 per cent. (nearly 1 in 100) are triplets in Iceland.

It will hence be seen, he continues, that the fertility of Icelandic, both married, and *especially* unmarried, is a great deal greater than that of the Danish, but that the population, in point of fertility, is not so well composed as the Danish. In Denmark, the number of married women out of the whole number of fertile women is 57·4 per cent., while in Iceland it is only 51·9 per cent. It will be seen from the above figures that the number of male births exceeds that of female births in a higher degree in Iceland than in Denmark. He has already shown that the probable life-time of the Icelandic, in relation to the males, is still better than in Denmark: hence it will not excite wonder to find that in the Icelandic population, the proportion of males to the females is as 1,000 to 1,120; while the proportion in Denmark is as 1,000 to 1,023. The proportion of still-born children is more favourable in Iceland than in Denmark; the proportion of still-born children to the whole number of births in the former being 3·3 per cent., and in the latter 4·4 per cent. The proportion of still-born males to the whole number of male births was, in Iceland, 3·6 per cent.; in Denmark, 4·9 per cent.; and of still-born females to the whole number of female births in Iceland 2·9, and in Denmark 3·8 per cent. It is also the case in Iceland as elsewhere, that this proportion is less favourable in the illegitimate births than in the legitimate.

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[*] See Transactions of Association for Promotion of Social Science, 1859: Dr. Farr on the Influence of Marriage in France, p. 504. Note, 1866.

In a publication, entitled *Natural and Political Observations and Conclusions upon the State and Condition of England*, published in 1696, Gregory King, after giving the estimated numbers of the population, and the annual marriages and births in England in his time, offers the following observations on the *productiveness of marriages:* We may observe that in 1,000 co-existing persons

There are 71 or 72 marriages in the *Country* producing 34·3 children.
78 marriages in *Town*, producing 35·2 children.
94 marriages in *London*, producing 37·6 children.

Whereby it follows,—1. That though each marriage in London produces fewer people than in the country, yet London in general, having a greater proportion of breeders, is more prolific than the other great towns, and the great towns are more prolific than the country. 2. That if the people of London, of all ages, were as long-lived as those in the country, London would increase in people much faster, *pro ratâ*, than in the country. 3. That the reason why each marriage in London produces fewer children than the country marriages seems to be (1). From *the excess of vice and immorality.* (2). From *the greater luxury and intemperance.* (3). From the greater *intenseness to business.* (4). From the *unhealthiness of the coal smoke!* (5.) From the greater *inequality in age* between the husbands and wives.

CHAPTER IV.

DEATHS-THEIR NUMBER AND CAUSES.

The deaths in England and Wales are about 400,000 annually, increasing with the population, and fluctuating very slightly. During the three years, 1850-1-2, the total deaths were 1,171,526, being at the rate of 1,066 *daily*, or 44⅜ *hourly;* and this is about the ordinary rate. The annual per centage of deaths is about 2⅓ over the whole population, varying from 1¾ (1·765) in Rutlandshire, to 2⅘ (2·818) in Lancashire. The mortality is highest in winter, and lowest in summer, varying, however, slightly in the different districts. When this order is reversed, the cause is some epidemic, such as cholera, which is most fatal in the summer season of the year. The rate of mortality amongst children under five years of age is observed to be steadily increasing. It was 6¾ in 1850, 7¼ in 1851, and 7½ in 1852 for every 100 males living.

With a view to place mortality observations on a more scientific basis, the Registrar-General has arranged the "causes of death" under seventeen general heads or classes. These again are divided into *five* sections;—and they are arranged as follows. The figures apply to all England and Wales, and the sexes are distinguished. We will take the result of two years—1851 and 1852—as bearing more particularly on some of the examples previously given.

CAUSES OF DEATH.	Year 1851.		Year 1852.	
	Males	Females.	Males.	Females.
1 ZYMOTIC DISEASES (fevers, &c.) ...	42,770	43,830	46,103	46,309
SPECIFIC DISEASES.				
2 Diseases of uncertain or variable seat (ulcers, gout, &c.)	7,822	11,598	8,065	11,590
3 Tubercular Diseases (consumption, &c.)	31,573	32,502	32,518	33,615
ORGANIC DISEASES.				
4 Diseases of the Nervous System ...	26,823	23,031	27,331	23,402
5 Diseases of the Organs of Circulation ...	5,746	6,071	6,148	6,369
6 Diseases of the Respiratory Organs (Pneumonia, Bronchitis, &c.)	26,270	22,489	25,717	21,683
7 Diseases of the Digestive Organs ...	11,694	11,525	11,907	11,834
8 Diseases of the Urinary Organs ...	2,611	805	2,827	862
9 Child-birth, and Diseases of the Organs of Generation	32	3,295	16	3,234
10 Diseases of the Organs of Locomotion ...	1,318	1,094	1,402	1,218
11 Diseases of the Integumentary System (the Skin, &c.)	514	326	490	340
DISEASES OF GROWTH, NUTRITION & DECAY.				
12 Malformations	445	341	454	407
13 Premature Birth and Debility	10,558	8,385	10,451	8,624
14 Atrophy (Indigestion)	5,912	6,283	6,526	6,530
15 Age	11,243	14,753	11,105	15,271
16 Sudden (disease unascertained)	1,986	1,472	2,105	1,486
17 EXTERNAL CAUSES (injuries, accidents, &c.)	9,723	3,836	10,458	4,017

Who, after perusing the foregoing figures, can have any doubt about the *uniformity* in operation of the laws of mortality? But if two years be too brief a period from which to draw a conclusion, let us cast our eye over the results of five years, combining the sexes:—here are the figures:—

CAUSES OF DEATH.	Years 1848.	1849.	1850.	1851.	1852.
Total Deaths from all causes	393,385	440,833	368,602	395,396	407,135
1 Zymotic Diseases	97,983	137,770*	74,833	86,600	92,412
2 Diseases of uncertain or variable seat	19,699	19,480	19,341	19,420	19,655
3 Tubercular Diseases...	66,025	65,206	60,385	64,075	66,133
4 Diseases of the Nervous System ...	46,090	47,911	47,450	49,854	50,783
5 Diseases of the Organs of Circulation	9,654	10,850	11,357	11,817	12,517
6 Diseases of the Respiratory Organs	44,801	44,542	43,827	48,759	47,400
7 Diseases of the Digestive Organs	23,367	23,503	22,314	23,219	23,741
8 Diseases of the Urinary Organs ...	3,041	3,129	3,332	3,416	3,689
9 Child-birth and Diseases of the Organs of Generation	3,121	3,243	3,187	3,327	3,250
10 Diseases of the Organs of Locomotion	1,947	2,377	2,367	2,412	2,615
11 Diseases of the Integumentary System	670	917	725	840	830
12 Malformations	797	713	781	786	861
13 Premature Birth and Debility ...	16,345	17,528	18,045	18,943	19,075
14 Atrophy	9,614	10,317	9,950	12,195	13,056
15 Age	27,520	28,335	26,102	25,996	26,376
16 Sudden	3,197	3,555	3,559	3,458	3,591
17 External Causes	13,551	13,334	13,987	13,559	14,475

By way of furnishing a practical application of the information which we have just brought together, we may venture to predict that the deaths in London, during this present year, 1857, will be from 60,000 to 61,000, assuming that no extraordinary epidemic should break out to alter the average.† And, keeping this proviso in view, we will go further, and state that one out of every *five* of such deaths will arise from *fevers*, *diarrhœa*, or some other of the diseases classed as zymotic. That one out of every *six* will arise from *consumption* (tubercular diseases), and another out of every six from bronchitis, pneumonia, or the diseases of the *respiratory organs*, other than consumption. That one out of every 10 will die from disease and derangement of the *nervous system*; and one out of every 20 from disease and derangement of the *digestive organs*; while only *one out of* 30 will die of old age! Tetanus, or *lock-jaw* will claim one out of every 4,000 for its victim; and altogether no less than 106 diseases will each carry off some portion of the predicted number. The very thought of such an army of destroyers makes one's blood run cold; but it is so. Well, we will add another item to our prediction; and let those who are curious apply the test; the Registrar's reports will furnish them with the materials for so doing. More than *one-fifth* of the entire deaths will be under one year of age. More than *one-third* under five years; and not more than one in 300 will reach the age of 90!

· The ordinary annual mortality in London, as we have seen, is 25 per 1,000. In 1856 the deaths were only 22 per 1,000—a result, as the *Times* ably pointed out, more favourable than any year except 1850, when "the field of destruction had been somewhat narrowed by the extraordinary ravages of the cholera in the previous autumn."

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* 1849 was the *cholera* year. ·

† They were 59,103. The year was a very healthy one. *Vide* Twentieth Annual Report of Registrar General. Note, 1866.

The *weather* in London, as through the country, has considerable influence on the number of deaths; and a mild winter is discoverable on the face of the bills of mortality. The Registrar-General, in his retrospect for 1856, gives a remarkable instance or two of this. The months of January, February, and March, were particularly mild, and the mortality was accordingly favourable. Passing over the summer months, we come to November, which "appeared to be closing mildly, when all of a sudden severe frost set in, and continued for a few days, when it as rapidly vanished. The period of cold reached from 26th of November to the 5th of December, both days inclusive; and the Registrar-General has compared the mortality of the metropolis during these ten cold days with that prevailing during ten warm days—two of which preceded, and eight followed the cold period. The very first approach of frost sent up the number of deaths, while *its departure instantly sent them down again*—the figures in the aggregate being 1,844 for the cold period, and 1,505 for that of comparative warmth—*giving an average in favour of mild weather of nearly* 34 *lives a-day*." The warm months, notwithstanding our prejudices to the contrary, being almost invariably the healthiest of the year.

The researches of Dr. Granville have enabled us to present some curious statistics on the subject of "sudden deaths." He found, out of 92,774 deaths of this class recorded in the registers, 39,321 were from apoplexy, 35,975 from paralysis, and 17,478 from other causes. Out of 27,848 deaths from these causes, the proportions in the various seasons were as follows: winter, 8,164; autumn, 7,188; spring, 6,728; summer, 5,768. These figures overthrow the popular belief that *heat* promotes disease of the brain, for sudden deaths are much more numerous in winter than in summer! He has also exposed the fallacy of another popular opinion, that sudden death is more frequent in advanced life than among the youthful. He shows that the period of life between 30 and 65 is as liable to sudden death, if not more so, than between 65 and 100. But the proportion of liability of the sexes is very different. It is stated that women have less chance of dying suddenly than men in the proportion of 10 to 18. In paralysis, however, the proportion is reversed, and there the mortality is greater among women. So far as the enquiries went, it appeared that paralysis prevailed much more among those engaged in intellectual pursuits, than in those who live by manual labour. Dr. Granville is of opinion, that in all cases of so-called sudden death there has been previous disease, of which death is only the natural termination. Healthy persons are not struck down dead in an instant, but there has been "a preparation, more or less antecedent to the occurrence which most inevitably have led to it, unless interfered with by a timely and successful watching on the part of the medical attendant. . . . . The event was only the natural termination of an inward state of things which insidiously and unsuspectedly was preparing the blow." *

Mr. John Reid, a surgeon in Glasgow, and the author of the *Philosophy of Death* has laid down a theory which appears to have a great show of truth about it. He says, "there is no general law of mortality arising from the physiological functions of the animal system, *excepting that resulting from the limit of structural endurance:* an organ may be destroyed in the first week of life from some excited disease, which, apart from that, might have remained entire, say, to the age of 100 years. *Disease is only an accidental occurrence to an individual;* for even the fact of 3,900 children dying the first five years, out of 10,000 born, only shows that all these children have become accidentally diseased, or have otherwise met with their death. But it may be said, that such a great proportion dying in infancy and early childhood, must be owing to a vital or physiological cause; or, in other words, that those who have died in early life must have been prone to disease. Such an inference," he replies, "is not admissible, *because, if the child live for any length of time apparently in a healthy state, it must be presumed that that child was born with its vital organs in a fit state for living.*"

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* Sudden death of A. B. Granville, M.D., 1854.

We may remark that this theory is the exact opposite of that advanced by Dr. Buchanan in his *Physiological Law of Mortality,* wherein he asserts that every child has, at birth, "the elements of its own decay." Mr Reid replies, "A child at birth cannot contain the elements of its own decay, else every child would die, because of the presence of those elements, which is contrary to the fact. *Life never comes to a 'spontaneous termination,'* excepting, as mentioned above, in some cases of extreme old age, *death being the result either of violence, or of organic disease, directly or indirectly excited in some organ.*"

Mr. Gompertz, whose name is intimately associated with the science of Life Contingencies, says hereon:—

> "It is possible that death may be the consequence of two generally co-existing causes; the one *chance*, without previous disposition to death, or deterioration; the other a deterioration, or an increased inability to withstand destruction. If, for instance, there be a number of diseases to which the young and old are equally liable, and likewise which should be equally destructive, whether the patient be young or old, it is evident that the deaths amongst the young and old, by such diseases, would be exactly in proportion of the number of young to the old, provided those numbers were sufficiently great for chance to have its play; and the intensity of mortality might then be said to be constant, and were there no other diseases but such as those, life of all ages would be of equal value, and the number of living and dying from a certain number living at a given earlier age, would decrease in geometrical progression as the age increased by equal intervals of time; but if mankind be continually gaining seeds of indisposition, or in other words, an increased liability to death, which appears not to be an unlikely supposition with respect to a great part of life (though the contrary appears to take place at certain periods), it would follow that the number of living out of a given number of persons, at a given age, at equal successive increments of age, would decrease in a greater ratio than the geometrical progression; and then the chances against the knowledge of any one having arrived to certain defined terms of old age, might increase in a much faster progression, notwithstanding there might still be no limit to the age of man."

Buffon says:—

> "When we reflect that the European, the negro, the Chinese, the American, the civilised and the savage, the rich and poor, citizen and peasant—otherwise differing so much from each other—are yet all alike in this, that the same measure, the same interval of time, separates their birth from their death—that difference in race, in climate, in food, in comforts, makes no difference in this common interval, we must acknowledge hat the length of life depends *neither upon habits, manners, nor quality of food;* that nothing can change the laws of the mechanism by which the number of our years is regulated."

What that number or limit may be is not attempted to be defined, or indeed even hinted at. If the limit be *fixed*, it cannot be within *two hundred years*, because we have numerous recorded deaths in this and other countries ranging up to that age: therefore it may be that the causes enumerated operate to *reduce the number reaching the limit*, whatever that may be. That they do so, indeed, we shall hereafter offer abundant proof. The subject will be more fully entered upon in our remarks upon longevity.

A writer in the *Quarterly Review* gives the following curious particulars regarding the *hours most fatal to life*, or in less doubtful words, the hours at which the greatest number of deaths takesplace. His observations extend over 2880 deaths at all ages, with a mixed population, and embraces a period of several years:—

> "If the deaths of the 2,880 persons had occurred indifferently at any hour during the twenty-four hours, 120 would have occurred at each hour. But this was by no means the case. There are two hours in which the proportion was remarkably below this—two *minima*, in fact—namely, from midnight to one o'clock, when the deaths were 83 below the average, and from noon to one o'clock, when they were 20¾ per cent. below. From three to six o'clock, a.m. inclusive, and from three to seven o'clock, p.m., there is a gradual increase, in the former 23⅓ per cent. above the average, and in the latter 5⅓ per cent. The *maximum* of death is from five to six o'clock, a.m., when it is 40 per cent. above the average; the next during the hour before midnight, when it is 25 per cent. in excess; a third hour of excess is that from nine to ten o'clock in the morning, being 17⅓ above. From ten a.m. to three p.m. the deaths are less numerous, being 16⅓ per cent. below the average, the hour before noon being the most fatal. From three p.m. to seven p.m. the deaths rise to 5⅓ per cent. above the average, and then fall from that hour to eleven p.m, averaging 6⅓ per cent. below the mean. During the hours from nine to eleven o'clock in the evening there is a minimum of 6⅓ per cent. below the average. Thus the least mortality is during mid-day hours, namely from ten to three o'clock; the greatest during early morning hours, from three to six o'clock."

We shall conclude this part of our subject by noting a few of the causes which exercise an influence over the mortality returns other than have been already touched upon. These will be chiefly comprised under the heads of violent deaths, suicides, deaths from starvation, &c. &c. The effects of consumption, cholera, fevers, and similar diseases, which also have an important influence on the mortality returns, do not come within the range of our present purpose.

We have it on the authority of the Registrar-General, that the *violent deaths* in England "appear to be *nearly twice* as frequent as in the other countries of Europe from which returns have been procured." Dr. Farr also speaks of them as being "on the increase in England." Hufeland, a half century ago, whilst recounting the various "enemies of life," noticed that the violent kinds of deaths swept off an immense number of mankind, adding, "and these in modern times have unfortunately made great progress." In attempting a solution of the cause of this, he says, "Not only have a more enlarged spirit of enterprise, the greater frequency of sea voyages, and more extensive trade multiplied such accidents, but people have fallen upon innovations for accomplishing the object of shortening life in an incredible quick and refined manner. I shall here mention only gunpowder and several new sorts of poison, such as *aqua toffana*, *succession powder*, &c. *Nay the art of killing has now become a peculiar and exalted science.*" The careers of Palmer and Dove afford us recent proof of the skilfulness of two of its professors.

In 1853—the most recent year for which we have returns at hand—the violent deaths from "evident external causes" were no less than 14,812—of these 10,725 were males and 4,087 to females. The total number was made up from the following causes;—373 were the direct effects of intemperance, exclusive of 509 deaths by *delirium tremens*, and other diseases *which should properly be referred* to this head. 78 deaths are attributed to want of food, 103 to cold, 21 to neglect, and 632 to the want of breast-milk, the natural food of infants. By poison 409 persons died; by burns and scalds, 2,590; by hanging and suffocation, 1,249; by drowning, 2,508; by wounds, 574; by fractures and contusions, 5,551; and by other violence, 724. Deaths by poison were less numerous in the two years, 1852-3, (779), than the two previous years 1850-1, (899). 36 *out of every* 1,000 deaths were by violence, being at the rate of eight to every 10,000 living. The only class of violent deaths to which females are more liable than males is burns and scalds—there being during the year 1853, 1,377 casualties to the former, and only 1,213 to males.*

Violent deaths appear to come almost equally under the *law of average* with those arising from natural causes:—here are the totals for six years:—

1848.	1849.	1850.	1851.	1852.	1853.
13,551	13,334	13,987	13,559	14,475	14,812

The increase, however, in the last two years named, is very rapid. Again, the proportions occurring to the different sexes also present uniformity:—

1851.	1852.	1853.
Males 9,723, Females 3,836	Males 10,458, Females 4,017	Males 10,725, Females 4,087

In 1849 the number was slightly below the average; but even in that year the following, amongst other items, stare us in the face:—

Fractures and Contusions	4,170
Burns and Scalds	2,761
Drowning	2,483
Hanging and Suffocation	1,069
Wounds	642
Poison	444

It has been predicted, and it certainly is to be hoped, that by improvement in the education and industrial training of manual labourers, rendering them more discreet; by improvement in the arts, rendering processes and engines more safe; and by moral, religious, and physical training of intellectual labourers, rendering them less liable to mental aberrations and suicides, the number of violent deaths may be somewhat reduced.

In many cases, this average of results strikingly illustrates the uniformity of operation of the human will. Take the case of *Poisons*; the following figures are from the Registrar-General's returns:—

DIED FROM POISON.

Year.	Males.	Females.	Total.	Year.	Males.	Females.	Total.
1848	308	261	569	1851	275	258	528
1849	290	236	526	1852	253	300	553
1850	304	249	553	1853	270	219	489

Giving an average of 536 persons annually poisoned, being *ten* in

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* Vide 16th Report of Registrar-General.

every week, or one in every 16 hours, "irrespective of those who die from the same means, and are registered with those who die from 'cause unknown,' 'sudden death,' or by the 'visitation of God.'" Such a state of things is, to say the least, very startling.

Murders, both in the numbers committed, and the manner of committing them, seem to be subject to the same law of average. Here are some statistics from M. Quetelet, quoted by Professor De Morgan, and relating to murders in France during the following years:—

	1826.	1827.	1828.	1829.	1830.	1831.
Total number of murderers brought to justice	241	234	227	231	207	266
How committed:—						
By Fire Arms	56	64	60	61	57	88
Sharp Weapons of War	15	7	8	7	12	30
Knives	39	40	34	46	44	34
Clubs or Sticks	23	28	31	24	12	21
Stones	20	20	21	21	11	9
Sharp instruments not above described	35	40	42	45	46	49
Striking or Kicking	28	12	21	28	17	26
Other modes, and unknown	25	23	10	4	8	9

Accidents in Coal and other Mines are liable to greater fluctuations. By the Parliamentary Blue-book, with the reports of the Inspectors of Coal Mines, to December, 1855, it appears that, in the three counties of Durham, Northumberland, and Cumberland, during the half-year ending 31st December, 1855, 79 accidents are reported, of which 18 were in shafts, 11 from explosions, 27 from falls of stone and coal, and 23 from sundry causes. In South Durham, between December 31, 1855, and March 1, 1856, there were eight fatal accidents in collieries. In the Lancashire, Cheshire, and North Wales districts, 165 accidents occurred in 1855, against 178 in 1854, and the number of lives lost in 1855 was 199, against 299 in 1854. Twenty-nine of the accidents last year arose from fire-damp explosions. In the counties of York, Durham, Nottingham, Leicester, and Warwick, during the year ended 30th June, 1855, the number of accidents was 108, against 113 in 1853-4, 119 in 1852-3, and 140 in the year 1851-2. In the half-year ending 31st December last, the number of deaths was 62, of which 10 were caused by fire-damp and suffocation. The report of Mr. T. Wynne, the Inspector of Coal Mines for the Staffordshire, Worcestershire, and Salopian district, for 1855, exhibits a lamentably heavy list of casualties producing violent deaths, confirming the opinion, by him formerly expressed, that "nothing but stringent legislation can stop the current of carelessness and indifference to the loss of life that leads to so many fatal accidents." There were several explosions in the year, causing 38 deaths. The gross total number of accidents in the South Western district during the year 1855 amounted to 181, causing 200 deaths. Mr. Mathias Dunn, the Inspector of Mines for the North of England, chiefly occupies himself with tracing the causes of accidents.

The deaths from *indigence*, or want of food, are happily not so numerous in this as in some countries. This is the more to be noted from the circumstance that the climate, as well as the occupations of the great body of the working classes, require a steady supply of nutritious food. In the southern parts of the continent of Europe, the poor live to a very great extent upon *fruit* of various kinds. In this country, too much fruit proves injurious to the health; although, if properly dressed, we believe it might be used much more generally, with great advantage to the working classes. Fortunately for us, in this country, the curse of *famine* is now unknown. If our crops fail us, which happily is not often the case, our wealth still secures us a supply from more fortunate, but less opulent, countries. But can we pass by this fact without turning our thoughts to the Sister Isle? The events of the last 15 years must be fresh in the memory of the youngest of us; and not least amongst them stands the "Irish famine." The deaths from want of food in England are less, on an average, than 100 per annum: too large a number, truly,—but let us set in contrast the figures which the recently published report of the Irish Census Commissioners has brought again forcibly before us. In 1842, the deaths from indigence in Ireland were 187. But from this date we may say, with a writer in the *Times*, "mark how the numbers rise. . . . . In 1845, they were 516; in 1846 they amounted to 2,041; in 1847 they reached the greatest height, 6,058; in the two following years together they amounted to 9,395, and so gradually diminished, although there is not much room, after all, for congratulation, seeing that, in the first quarter of 1851—that year of grace, that *annus mirabilis*, which has been described as if it were the jubilee of the world—there were not less than 652 deaths attributed to starvation. In the whole period of 10 years to which the census refers, the deaths of this class were 21,770, the sexes being in the proportion of 70 females to 100 males."[*]

There are other causes which undoubtedly exercise some, and perhaps a considerable, influence on the mortality of the kingdom, but cannot be classed with violent deaths or with suicides. These deserve a passing notice. The first which occurs to us is the increased mortality arising from *confinement in prisons*. We do not remember to have seen any English statistics on this particular point, but it is stated on good authority that the ordinary mortality in the prisons of France is *one in twenty-three*—a rate which corresponds to the age of 65 in the common course of life. In the vast majority of cases, however, the unfortunate victims of the law are no older than from 25 to 45 years of age. Taking them at the mean age of 35, it follows that the suffering from imprisonment, and from the causes that lead to it, is equivalent to 30 years' wear and tear of life.[†]

We may next speak of *mental suffering* under this head. The effect of mental suffering, in accelerating the ratio of mortality, has attracted the attention of several writers. The Registrar-General, in his eighth annual report, says:—"The life of a man bears a certain proportion to its happiness. A miserable life is soon extinguished: violent lives end abruptly; the life of a good, wise people approaches its natural term." On the same subject, Dr. Southwood Smith says:

> "It is impossible to maintain the physical processes in a natural and vigorous condition if the *Mind* be in a state of suffering. The Bills of Mortality contain no column

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[*] 18th September, 1856.—Article on the Irish Census. [†] Smith's Philosophy of Health

exhibiting the number of persons who perish annually from bodily disease produced by mental suffering; but every one must occasionally have seen appalling examples of the fact. Every one must have observed the altered appearance of persons who have sustained calamity. A misfortune that struck to the heart happened to a person a year ago. Observe him sometime afterwards; he is wasted, worn, the miserable shadow of himself; enquire about him at the distance of a few months: he is no more."

This leads us more particularly to the subject of *suicides*. These, unfortunately, do not appear to decrease with the progress of civilization, but rather to increase. Statistics of this class have not hitherto been well kept in this country. It may be stated, however, that the greatest proportion of our suicides are in the middle and upper classes; hence, the poorer the district, the fewer the suicides. We do not know if this observation applies to other countries; if so, it may perhaps go to explain a circumstance which we have noticed in looking over various returns—namely, that suicides are less general in Roman Catholic than in Protestant countries. We should be glad to meet with statistics more directly bearing on this question.

The records of Insurance Offices could furnish much interesting, and perhaps useful, information regarding suicides in this country and America. Out of 330 deaths among the assurers in one office, during 26 years preceding 1831, *eleven* died by suicide, being 1 in 30; thereby "implying the existence of an appalling amount of mental suffering." Formerly, the Assurance Offices were gainers by suicides, except in cases of *bona fide* transfer of the policy to a third party, thepolicies becoming forfeited under the conditions. Latterly, a more generous spirit has been manifested by the Offices, and all the most liberal of them now agree to pay to the families of assurers the "surrender, or office value," of the policy the day before death took place. This is as it should be. We shall hope very soon to see it become the practice to pay to families the full amount of the policy where the same shall have been in force for a certain fixed period—say, two or three years. But we shall refer to this in another place.

Some papers, published in the *Assurance Magazine*, by Mr. R. T. Jopling, who has paid much attention to this branch of statistics, enable us to give a few curious particulars on the subject of death by suicide. It must be remembered that the following figures apply to *London* only, and not to the whole kingdom. During the five years from 1846 to 1850, both inclusive, the total number of recorded suicides in London was 1,211, of which 819 were males, and 492 females. Thus, the annual average number was 242, and the proportion of females to males about 48 per cent., or less than one-half. The following Table gives the ages, in periods of five years, as well as the sexes of suicides:—

Ages.		Male.	Female.	Total.	Ages.		Male.	Female.	Total.
9	during 5 years	2	—	2	50 „ 54	during 5 years	93	30	123
10 to 14	„	8	4	7	55 „ 59	„	64	25	89
15 „ 19	„	36	44	80	60 „ 64	„	58	18	76
20 „ 24	„	60	45	105	65 „ 69	„	36	7	43
25 „ 29	„	65	51	116	70 „ 74	„	24	9	33
30 „ 34	„	73	40	113	75 „ 79	„	7	3	10
35 „ 39	„	103	38	141	80 „ 84	„	9	3	12
40 „ 44	„	83	41	124	not stated	„	4	2	6
45 „ 49	„	99	32	131					

The ages at which the greatest number of suicides is shown are those between 35 and 40. The years in which the greatest number took place were in 1846 and 1847—the period of the Railway panic. It is not a little remarkable, however, that the increase was with the females, and not the males.[*] It is also remarkable that while the proportion of crime is nearly five times greater in the male than in the female sex,[†] the proportion of suicides, as we have seen, is only twice as great.

Mr. Jopling points out various other notable points in the statistics he furnishes. The suicides under 15, in both sexes, are comparatively nothing. The number among males is greatest between the ages of 65 and 75, and with females between 55 and 65. For both sexes, between 15 and 85, the deaths by suicide are yearly 1 in 6,411 of the population of London. M. Quetelet gives us the means of comparison with other countries:—

			Annually.				Annually
In Russia the suicides are	1	in	49 182	In Prussia the suicides are...	1	in	14 404
„ Austria	1	„	20.900	„ City of Baltimore	1	„	13 656
„ France	1	„	18 000	„ Boston	1	„	12 500
„ State of Pennsylvania	1	„	15,875	„ New York	1	„	7,797

In and around Paris, the deaths from suicide between 1817 and 1825 were, 1 in 2,400; in Berlin, from 1813 to 1822, 1 in 2,941; and in Geneva, from 1820 to 1826, 1 in 3,985 annually. It has been observed in Paris that suicide has regularly increased: from 1829 to 1833 it was 1 in 1,666! Russia forms a striking example of little or no suicide, the deaths being only 1 annually in every 49,182 of the population. It will be observed, however, that suicide in large tracts of country is comparatively small—confining itself, in a great measure, to the large towns. Now, although we have in Paris 1 yearly in every 1,666 of the population, yet it will be seen that, in the whole of France, it is only 1 in 18,000.[‡] The same reasoning will apply to England.

There can be little doubt but that all the statistics published fall short of the actual occurrences, as they do not include deaths recorded under the head of "found drowned," or, indeed, any but *ascertained* suicides. In France, where more attention is paid to statistical information of all kinds than in this country, the *causes*, as well as the number of suicides, are frequently ascertained and recorded. Mr. Jopling presents the following facts, collected in the Prefecture of the Seine, relating to 511 cases of ascertained suicide:—

CAUSES.	Number.	Per Centage of Totals.
From love or wounded affections	100	20
„ disease, disgust of life, &c.	148	29
„ an evil course of life- loss at play	69	13
„ distress, loss of employment, embarrassed affairs... ...	100	20
„ unknown motives	94	18
Totals	511	100

It would seem that each sex has its peculiar method of terminating life. Of 812 male suicides observed upon, 312 (or 38 per cent.) were accomplished by hanging; 219 (or 27 per cent.) by cutting throat and stabbing; 120 by poisoning; 87 by drowning; 53 by shooting; and 21 by throwing from heights. Of 389 female suicides, the greatest number were committed by poison, viz., 115, or about 30 per cent.; and hanging, viz., 109, or 28 per cent. It would further seem that each country has also its peculiar method of terminating existence. Thus, out of 511 suicides committed in Paris, 65 were by falling from heights, 66 by strangulation, 45 by pointed and cutting instruments, 48 by fire-arms, 31 by poison, 86 by asphyxia from charcoal vapour, and 170 by drowning; this last method constituting 32 per cent. of the whole deaths, while in England the greatest number, viz., 27 per cent. of the suicides, were accomplished by hanging! Mr. Jopling goes still further, and discovers that *age* has much to do with the method selected for self-destruction. Thus, in early life, "poisoning" seems to predominate; next in order is drowning, "throat-cutting" being close in its rear; while in middle and later life "hanging" more generally predominates. The moralist, physiologist, and the phrenologist may each find materials for reflection in the facts just detailed.*

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[*] Assurance Magazine: Vol. i, p. 310.

[†] "Statistics of Crime, &c.," by F. G. P. Neison, Esq.

[‡] Jopling.

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* For further information on this topic, see Mr. Jopling's papers in the Assurance Magazine: Vols. 1 and 2.

CHAPTER V.

PROGRESS OF THE POPULATION.

The progress of the population is intimately associated with our present subject: the earliest writers, we have noticed in our historical division, appear to have discovered this association, and to have pursued it with avidity. Both Graunt and Sir William Petty were more curious than learned on the matter—as indeed was to be expected—they being pioneers in such inquiries. It was Dr. Milne (the compiler of the Carlisle Mortality Table) who, in his learned treatise on Annuities, first traced out this association in its more important bearings: and it was the want of a more complete knowledge of the laws of population that led Dr. Price into the commission of an error, which constitutes the greatest defect in the Northampton Table. On this point more will be said as we proceed.

We shall not be plunging too deeply, or too suddenly, into the question if we at once point to the probability that those causes and circumstances which tend to *increase the population* also have a tendency to *extend the duration of life:* and if this be admitted, it follows that we are not "travelling out of the record" in claiming space for this chapter.

We purpose then—somewhat scantily it must be admitted for such an important subject—to note some of the causes which have mainly contributed to the rapid increase of the population of this country: nor shall we leave unnoticed some of the tendencies which have sprung up, and may from time to time again spring up, of an opposite character. While, therefore, speaking of the beneficial effects of peace and plenty, we shall take a glance at the opposite tendencies of war and famine. Or while dilating upon the advantages which have accrued from the discovery of vaccination and the improvements in medical science generally, we shall not fail to pass in review the evils which result from a still too-fatal neglect of proper sanitary measures; and the consequent existence and recurrence of fevers and epidemics, which are, and have been, far more detrimental to the human race than all the wars and famines upon record.

It is no part of our present purpose to deal with political considerations, except in so far as they have a direct bearing upon our subject, otherwise we might adopt the language of a recent popular writer, and point out that in a country like England, "which has its ground to hold in Europe, while it replenishes the utmost parts of the earth with a never-ceasing emigration, the reproductive power of the population is a matter of the greatest moment." Leaving this point where it stands, we think, after the preceding chapters on Births, Marriages, and Deaths, it will be admitted that such statistics "have an interest of their own"—that they never lose their importance—and never can, while we, as individuals, are liable to all the penalties, inconveniences, and sacrifices which afflict us in the aggregate as a nation!

Let us start with a fact of which we may be alike proud and thankful; namely, that the population of this country was never more rapidly increasing than at the present time: that is to say, that the *births* never bore a larger proportion to the *deaths*. In the first quarter of the year 1857 the increase of the population was at the rate of about 1,000 per day, or 365,000 per annum. After deducting therefrom 165,000 for emigration, the year's increase is estimated by the Registrar-General at 200,000! The deaths during the same period were 108,527, or 23 in 1,000—the average of the season being 25! Such facts, in the face of the present aspect of the political horizon, are exceedingly encouraging.

The materials for such enquiries as the present were formerly very scanty. The first general enumeration of the people only took place as recently as 1801. Before that period there existed no certain data for computations; and numbers could only be arrived at by *estimation*. Of course many vague speculations were indulged in; and, as is usual in such cases, greatly exaggerated estimates were formed. We have seen, in a previous chapter, that in the 17th century, "men of great experience" seldom talked "under millions of people to be in London"—while the actual number at that period turned out to be only about 400,000! Having, however, once obtained something like a correct enumeration, it was found possible to apply the facts so obtained to the purposes of approximate estimates at antecedent periods. This task was undertaken by the late Mr. Rickman, of the Board of Trade, who, in 1836, addressed a circular letter to the Clergy throughout England and Wales, asking for their assistance in preparing returns from the parish registers, of the births, marriages, and deaths at different periods.

Parish registers, as we have already seen, were first kept in England in 1538, although in a very imperfect form; and they were by no means general. However, out of about 10,000 parishes in England, it was found one-half possessed registers which were commenced prior to 1600; and of these, three-fourths were commenced as early as 1570. From these registers Mr. Rickman was supplied with the number of births, marriages, and deaths for six periods, each embracing three consecutive years, from which he calculated the average population of each period. It was then assumed that the births, marriages, and deaths were in the same proportion to the population of each period as in 1801.* The result of the estimate, prepared according to this mode of calculation, showed that the population of England and Wales in each of the following years, was as under:—†

Year.	Approximate Population England and Wales.	Per centage of increase during each year.	Year.	Approximate Population England and Wales.	Per centage of increase during each year.
1570	4,160,321	...	1670	5,773,646	8
1600	4,811,718	15½	1700	6,045,008	4¾
1630	5,600,317	16¼	1750	6,517,035	7¾

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* *National Encyclopædia*, art. *Census*.

† *In 1086 the population, according to* Doomsday Book, was 1,000,000. Note, 1866.

From 1801 we have the correct population returns. These include Scotland, but *not* Ireland, or the Isles in the British Seas.

In 1801 the Population of England and Wales was	8,872,980
" " Scotland	1,599,068
	10,472,048
In 1811 the Population of England and Wales was	10,150,615
" " Scotland	1,805,688
	11,956,303

The first census in *Ireland* was taken in 1813, but in a very imperfect manner: six counties, indeed, being altogether omitted. At the census of 1821, however, Ireland was properly enumerated, and we therefore now add the result to the other returns. Thus we have the following returns for each decennial period down to the present time:

1821,—England, Wales, and Scotland	14,072,331
Islands of the British Seas	89,508
Ireland	6,801,827
Total, United Kingdom	20,963,666
1831, England, Wales, Scotland, and British Islands	16,366,011
Ireland	7,767,401
	24,133,412
1841,—England, Wales, Scotland, and British Islands	18,664,761
Ireland	8,175,124
	26,839,885
1851,—England, Wales, Scotland, and British Islands, and Army, Navy, and Merchant Seamen, at home and abroad ...	21,121,967*
Ireland	6,553,357†
	27,675,324

With these figures before us we are in a better position to understand the relative, as well as the actual, progress which has been made. The late Mr. Porter (also of the Board of Trade) found the per centage of increase up to 1841, to be as follows:—

England	33¼	per cent.;	or nearly 1¾	per cent. annually.
Wales	27	"	just above 1¼	"
Scotland	25¼	"	about 1¼	"
Ireland	20½	"	, 1	"
United Kingdom ...	27	"	above 1¼	"

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* When we talk of the population of Great Britain being twenty-one millions, it is a very difficult thing to form an estimate of the magnitude of the numbers we speak of. A very ingenious computation has been hit upon, with a view of furnishing some aid in this particular:—If all the people of Great Britain had to pass through London in procession, four abreast, and every facility was afforded for their free and uninterrupted passing, during twelve hours daily, Sundays excepted, it would take nearly *three months* for the whole population of Great Britain to file through, at *quick march, four deep.* To count them singly, at the rate of one a second, would take *a year and-a-half*, assuming that the same number of hours daily were occupied, and that Sundays also were excepted! In order to enumerate this mass in one day, 38,740 enumerators were appointed, each having a given district allotted to him. 92 tons of paper were used for schedules and enumeration books; and the cost of the entire proceeding was £125,437, or not quite three halfpence per head of the population."—Vide *Results of the Census*, by Edward Cheshire, a clever little publication, which rapidly passed through many editions.

† There appears to be some slight discrepancy with respect to Ireland, as we have seen the total numbers of the 1851 Census given at 27,724,849, from an official source; while the English numbers remained the same as above given—discrepancy 49,525.

The annual rate of increase has varied in each decennial period. In fact, as the number of the population has increased, the rate of increase has declined. This, in a great measure, is the result of *emigration;* the statistics of which are as follows:—From 1821 to 1831, 274,310 persons emigrated from the United Kingdom; in the years ending 1841, 717,913 persons emigrated, being nearly three times as many as in the previous ten years; and in the ten years ending 1851, the number reached to 1,693,516! being more than twice the number of the previous ten years, and six times the number for the period between 1821 and 1831. Emigration, therefore, considerably interfered with the numbers at the census of 1851. Still Great Britain showed an increase of 2,457,206; and if the increase continues uniformly at the same rate as it has done from 1801 to 1851, the population will double itself every 52½ years.* The combined effect of emigration and the famine in Ireland *reduced* the population of that island from 8,175,124 in 1841 to 6,553,357 in 1851—difference, 1,621,767. The *increase* in the previous ten years was 407,723!

The period at which the most rapid increase in the British population has taken place—with the exception of the present time—was undoubtedly that from 1801 to 1821, when emigration was so small as to present no perceptible influence. The true test of an increasing population is where the births are found year by year to be greater than the deaths. Mr. Porter applied this test to the period of which we are speaking, and gave the following as the result:—

Ten years preceding 1811...*Births*, 1 in 31.—*Deaths*, 1 in 53 of the whole population.
Ten years preceding 1821...*Births*, 1 in 31.—*Deaths*, 1 in 60 „

While for the next ten years, preceding 1831, he found the births one to 34 of the population only, and the deaths one in 58. There can be no doubt that he considerably understated the number or proportion of deaths, but as he would do so at each point of the comparison, it holds good for the purpose he intended it. The deaths, notwithstanding all the improvement in mortality during the last half century, are now one in 45 annually.

During the 50 years from 1801 to 1851 the annual average progress has been at the rate of 1⅓ per cent. The progress of the *sexes* was very nearly equal, being just perceptible in favour of the females over the whole period. In the various decennial periods, greater variation was observable. If the same ratio of progress continue, the population of Great Britain will double every 52½ years. That of England and Wales every 51 years; Scotland making less progress. Dr. Farr says:—"The population of England has increased threefold since 1751, and at such a rate that to every million men in 1751 there were 1½ millions in 1801, and 3 millions in 1851. In mere numbers, the nation of 1851 is equivalent to three of the Englands of 1751."

It may be remarked that the progress of population proceeds at a *compound* ratio, and may therefore be likened to money improving at *compound interest*. A recollection of this fact is useful in estimating the time in which a population will double itself. If the increase be at the rate of 2 per cent. per annum, the numbers will be doubled in 35 years. If at 2½ per cent., 28 years; or if at 3 per cent.—the rate at which London has increased of late—in 23½ years. Money, improved at those rates of interest, will double in the like manner.

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* *Results of the Census*—Cheshire.

The Commissioners appointed for conducting the Census of 1851 directed particular attention to the question of the increase of the population, and the causes which had led to it, not only during the present, but previous centuries. They reviewed the results obtained by Mr. Rickman, and by comparing them with the computations of various early writers taking an interest in the subject, arrived at the conclusion that the population of Great Britain, and the Islands in the British Seas, was as follows in the middle of each of three centuries,-that for the present century being based on actual returns.

			Increase during two centuries.
1651	estimated population	6,378,000	
1751	" "	7,392,000	1,014,000
1851	enumerated population	21,185,000	13,793,000

This return includes Scotland and the Islands of the British Seas, while Mr. Rickman's figures did not. His estimate in 1750 was 6,517,035.

They (the Census Commissioners) offer the following remarks upon the result of their inquiry:—"According to the estimates, the people of these Islands amounted to more than *seven millions* in 1751, and to more than *twenty-one* millions in 1851; they having increased nearly *fourteen millions* in the hundred years; while the increase of the numbers in the preceding century (1651-1751) was only *one million;* and the numbers *can scarcely be wrong, either way, more than half a million.*"

"To what," they ask, "is this remarkable multiplication of population in the last hundred years, and its previous slow progress, due? Is it a simple question of supply and demand? Is it something fortuitous, and entirely inexplicable? Is it the result of some simple change in the institution of families? Or of some miraculous addition to the powers of population? Undoubtedly, several causes have concurred in the creation and sustentation of twenty-one millions of people on Islands that have never before been the home of seven millions; and several of these causes, although subsidiary, have been powerful in their operation; but it is probable, from an examination of the facts, that a change in the marriage institution, and a great improvement in the character of the parents, have had the chief and most direst effect on the numbers of their children now living."

The first evident cause of the increase of the population is, they say, *a diminution of the mortality.* A cessation of the great plagues which devastated England in the 17th century was followed in the 18th century by a diminution of disease. The towns were improved, and the habits of the people became more cleanly—their *food* more suitable and varied. *Medicine* advanced rapidly after the discovery of the circulation of the blood by Harvey, and of Sydenham's practical methods of treatment. Innoculation was tried, and Jenner's discovery of vaccination secured the life as well as the beauty of the women from the ravages of small-pox, which was fatal, in 1695, to Queen Mary. The plague of Marseilles excited, in 1719, a salutary terror in England; and, among other useful sanitary publications, led to one of lasting importance by the great Dr. Mead. The army in the war of 1743-6 was followed to the Low Countries by Sir John Pringle, who successfully investigated the circumstances that affect the health of large bodies of troops on land; while Captain Cook, in his voyages, showed how sailors, who formerly could not be kept alive or in health for two months in the Channel, might, by proper provisions and judicious arrangements, be carried round the world in safety. These important new doctrines and striking examples led to the amelioration of the prisons and other public institutions. They had some influence with the progress of the arts and sciences, on the municipal arrangements, and, through them, on the health of the general population.

"The deaths,"they continue,"first diminished proportionately, but it is to the increase of the marriages and of the births, as well as to improved manners, that we directly owe a large part of the accession of fourteen millions of people to the population of Great Britain, as will be rendered evident by an examination of the state of the population in the two periods; an examination necessarily cursory, and referring simply to the most salient and accessible facts illustrative of the influence of manners on the increase of numbers, without any pretension on our part, as moralists, to censure the manners of the former, or to applaud the manners of the latter century. Such a state of the relations between the two sexes may be conceived as would, within certain limits, reduce or increase the number of births to almost any extent, and it will be shown that the time, the energies, and the earnings of the people, which had in 1651-1751 been wasted in intrigues, in riotous assemblies, on gin, and in gambling, were devoted in the next century (1751-1851) to the establishment and support of quiet, industrious families.*"

The importance of the considerations embraced in the above observations must be our apology for quoting them so fully.

These foregoing considerations range themselves chiefly under two heads or classes: first, the diminution of mortality; and next, the increase of the powers of production. They each operate in the same direction, and when they combine, the progress of population is generally rapid. We shall first speak of increasing the powers of production, as, of the two, bearing most direct influence. We may, however, premise that the effects of improvements in medical science, the means by which epidemic diseases have been, and may yet be, further checked, together with the progress of sanitary science, will be fully discussed in our chapter on vital statistics, and will, therefore, only be glanced at generally here.

It was a favourite maxim of Malthus, "take care of production—population will take care of itself"—which he afterwards explained more fully in this wise, "the progress of population is almost exclusively regulated by the quality of the necessaries of life actually awarded to the labourer." Nearly all other political economists have concurred in this, or expressed similar views; and nowhere have they been better expressed than by the learned Commissioners from whom we have just quoted, and they also state the converse of the proposition:—

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* *Vide* Census Report.

> "The numbers of the population are increased by an abundance of the necessaries of life, and reduced by famines, epidemics, and public calamities, affecting the food, industry, and life of the nation. The pestilences of the middle ages - the famine, the influenza, and the cholera of modern times—are examples of one class of these agencies; the security of freedom which England has latterly enjoyed is an example of the beneficial effect of another class of influences, not only on the happiness of the people, but also on the numbers which the country can sustain at home, and send abroad to cultivate, possess, and inherit other lands."

Cheap food, the absence of epidemics and public calamities—in other words, "peace and plenty," a clean bill of health, and commercial prosperity, constitute the main elements of national progress. This proposition may be most readily confirmed by noting periods in our national history when any of the opposite conditions have existed. For these we need not travel beyond the record of our memory. The year 1847 occurs to us as an instance. That year brought about the greatest commercial panic of modern times. From £2 14s. 9d., in 1846, the price of wheat rose to £3 9s. 5d. in 1847; and see what followed. The *marriages*, from 145,664 in the former year, fell to 135,845 in the latter. The *births*, from 572,625 to 539,965. And the *deaths* rose from 390,314 to 423,304—an increase of no less than *thirty-three thousand!* The influence of this one year of high prices and commercial adversity upon the population, cannot be estimated at much less than a quarter of a million. Well might the Registrar-General point to these figures as exhibiting "the results of great public prosperity and adversity in strong contest."

A more recent instance is at hand—the causes different, the result the same. The Russian war commenced in 1854. The price of wheat in 1853 was £2 13s. 3d. per quarter, and the marriages in that year were 164,520. In 1854 the wheat rose to £3 12s. 7d.—the marriages fell to 159,727. But the full force of the war was not felt till the following year. In 1855 wheat rose to £3 14s. 9d.—the marriages, sinking in an inverse ratio, only numbered 152,113, being more than *twelve thousand* less than those of 1853! The *births* of the two years remained about stationary, but what of the *deaths?* *They* rose in 1854 to 437,905. In 1855 they were 425,703; but in 1856, when the war had ceased, and things assumed their accustomed course, they sank to 391,369!

It may be said that these cases are exceptional. It would be well if they were so. We have, however, abundant and reliable proof to the contrary. Dr. Milne, with whom the reader has already become acquainted as the learned compiler of the Carlisle Table of Mortality, gave many years of serious consideration to the causes which operate for and against the progress of population. He arrived at the conclusion that the secret lay in the *price of food*—the price being regulated by the supply, and the supply affected by political causes, as *peace* and war, commercial prosperity or adversity. In support of his views, he prepared the followihg Table, confining it to the effects of peace and war, the great events of his time :—

TABLE,

Showing the influence of the Price of Food, as regulated mainly by a state of Peace and War, upon the progress of Population

	Year.	Population.	Increase.	Died 1 of	Wheat per Quarter.
WAR	1780	7,444,871	42.665	35½	£1 15 8
	1781	7,491 240	50 074	36¼	2 4 8
	1782	7.543,062	53,569	38¼	2 7 10
	1783	7,593,317	46,941	38¼	2 12 8
PEACE	1784	7,641.855	50.135	37¼	2 8 10
	1785	7,704.434	75 024	38	2 11 10
	1786	7.782,777	81 661	40	1 18 10
	1787	7,866 395	85 576	40¼	2 1 2
	1788	7 954 021	89 676	40¼	2 5 0
	1789	8,045.078	92 437	41½	2 11 2
	1790	8 142 226	101 860	41¾	2 13 2
	1791	8,242.082	97.851	42	2 7 0
	1792	8,348,239	114,464	42	2 2 11
WAR	1793	8,448 384	85 826	39½	2 8 11
	1794	8.533 284	83.973	41	2 11 8
	1795	8,606 974	63 408	38¾	3 14 2
	1796	8 685 507	93 658	43¼	3 17 1
	1797	8 786 911	109 150	43½	2 13 1
	1798	8 900,484	117.995	45	2 10 3
	1799	9 014 341	109.720	45¼	3 7 6
	1800	9.102 470	66.539	41½	5 13 7
	1801	9,158,908	46,336	42½	5 18 3
PEACE	1802	9,234,637	105,121	43¾	3 7 5
WAR	1803	9,351.437	128,480	43½	2 16 6
	1804	9.496,290	161 226	49¾	3 0 1
	1805	9,655.772	157 737	50½	4 7 10
	1806	9,811.743	154,206	50¾	3 19 0
	1807	9,963 082	148 472	48¼	3 13 3
	1808	10,105 063	135 490	47¾	3 19 0
	1809	10 249,941	154 266	50¾	4 15 7
	1810	10,391,520	128,891	47½	5 6 2

This Table requires and deserves careful consideration. As more particularly elucidating the purposes of its preparation, and the point we are now considering, we may point to the years which closed the last, and introduced the present, century. Commencing with 1799, we find the price of wheat £3 7s. 6d; the deaths in the proportion of 1 in 45¼ of the living, and the increase to the population 109,720. In 1800—the country having then been engaged in warfare for a period of eight years—wheat rose suddenly to £5 13s. 7d.; the deaths followed suit, and increased to the ratio of one in 41½, or 26 per cent.

With that impartiality, however, which is the characteristic of great minds, Dr. Milne reminds the reader :—

> "That, although the progress of the population is evidently influenced by every considerable variation in the price of wheat, it *does not exactly correspond with it;* and small variations in the price are sometimes accompanied by alterations in the progress of the population in the inverse order of that which generally obtains. An instance of this occurs in making the comparison between the years 1795 and 1796, when, although the price rose 3s , the annual marriages increased 4,000, the conceptions 12,000, and the deaths decreased 20,000." But, he adds, "*the returns of epidemical diseases, especially the small-pox, may also have had a sensible influence in deranging the correspondence between the progress of the population and the supply of food.*"—p. 394-5.

We have only to look across the Channel to behold a striking instance of the combined effects of political excitement, scarcity, disease, and war. We are all familiar with the events of 1847 in France. Are we all prepared to hear that the excess of births over deaths fell from 237,000, in 1846, to 62,000 only in 1847? *Scarcity* lent its aid to political excitement to bring about this result. Even this small excess was, by reason of *cholera*, in 1849, reduced to 13,000! A slight improvement then took place, but things grew worse again after 1851. By 1854-5, the double influence of *scarcity* and *war* were at work, and, for the *first time* in the history of that country, *the deaths exceeded the births.* The result altogether has been, that for the five years ending 1856, the population of France has only increased 256,000 against 1,170,000 in the previous five years.*

The mention of political excitement carries the memory back to 1832, when the subject of the "Reform Bill" was in agitation throughout the length and breadth of the land, but more particularly in London. Do we find any perceptible difference in the mortality returns? Let the reader judge for himself:—

Deaths in London for a period of 10 years.

1824	20,237	1829	23,524
1825	21,026	1833	26,643
1826	20,758	1831	25,337
1827	22,292	1832	98,606
1828	21,709	1833	26,577

We do not want to go further. The deaths of the "Reform year" in London alone were 3,229 more than those of the year which preceded, and 2,029 more than the year which followed. The population was increasing about that period at the rate of 3 per cent. per annum.

While we believe an abundance of cheap food to be essential to the progress of population, we by no means advocate *luxurious living*, in the sense in which it is generally understood; for *that*, undoubtedly, has an opposite tendency. We want no other proof of this than to contrast the average numbers of the families of the wealthy classes as against those of the peasants and the industrious classes generally. This every reader can do from his own personal knowledge. Nor are luxuries at all productive of long life—in fact, nearly all the recorded instances of extreme longevity point in an opposite direction. There is no class of men in this country, which for many years, has fared worse than the Dorsetshire agricultural labourers, and there are few classes of persons who experience a more favourable rate of mortality; it being, at the ages from 20 to 40, *less* than 1 per cent. per annum. We laugh, as well we may, at the laws enacted by our forefathers to restrain luxury of living, knowing, as we do, that they too frequently spring from envious and corrupt motives. Why, in the reign of Edward III.—500 years ago—no man with an income under £100 per annum was allowed to *wear gold*, *silver*, or *silk* on his clothes! *Servants* were also prohibited eating flesh meat or fish *above once a day*, and no one was allowed, either for dinner or supper, above three dishes in each course, and not above two courses.* And all this by Act of Parliament! Such restrictions are no longer enforced, for *moderation*, alike in eating, drinking, and dress, has become an acknowledged virtue.

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* Vide *Times*, 10th April, 1857.

Having glanced at the causes which operate for and against the productiveness of the population, we may now look to some of those which lessen, or tend to lessen, the rate of mortality. We have more than once referred to the fact that the mortality of the kingdom has been steadily improving during the past century. Dr. Milne (writing about 1815) said, "Among the causes which have contributed to the gradual reduction of the rate of mortality in England and Wales during the last 40 or 50 years there is reason to believe *that the education of the common people has been one of the most powerful.*" Dr. Adam Smith, in his *Wealth of Nations*, had previously pointed out that the influence of the division of labour, consequent upon the advancement of manufactures, *unless counterbalanced by education*, would have a tendency to produce a "drowsy stupidity," and to "benumb the understanding" of "the inferior ranks of the people." With every desire to award to the influence of education all that its most ardent admirers—with whom we claim to rank—can establish in its behalf; and a sincere wish that *it had* more effectually removed that "drowsy stupidity," which induces, or at least permits, the industrious classes to live in localities surcharged with the elements of disease and premature death—we fear we must look to other remedies than education, in the ordinary sense of the term, can be expected to furnish. We must now glance at the evils which remain to be removed.

The annual rate of mortality in the country—that is, in small towns and villages—is now about 20 in 1,000, on an average; but in large towns it is 26 to the 1,000, or very nearly one third more. There are in Great Britain 815 towns of various magnitudes—580 in England and Wales, 225 in Scotland, and 10 in the Channel Islands. About one half of the population, however, reside in what may be called large towns; it is, therefore, "evidently a matter of the first importance to remove those evils which weaken the strength of a town population, and hasten them to a premature grave" A powerful writer in the *Times* has declared this to be the *great moral to be learned from all our statistical returns*; urging that England is every day becoming more and more a hugh aggregation of urban communities; and that, although the wonderful physical constitution of the race enables it to struggle against deleterious influences, it is unwise to trust the policy of non-interference too far. The nation, as a whole, is bound to provide for the healthy growth of its children, and if due pains be taken to construct and cleanse our over-increasing cities, we may hope for a long duration of such progress as is indicated by the more recent returns of the Registrar-General.

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* Wade's British History.

The Census Commissioners did not fail to point out that the prolongation of the life of generations, *as well as the increase of births*, tends to increase the numbers living at one time; that is, the numbers of the population. Thus, of 100,000 children born at *Liverpool*, only 41,797 live to the age of 20, while in *Surrey* that age is attained by 70,885 out of the same number of children born: the *probable* lifetime is about 6 years in our unhealthiest towns—52 years in Surrey, and other comparatively healthy parts. In *Manchester*, where the mortality is higher, 100,000 annual births only sustain, at the ages 20-40, a male proportion of 38,919; while in all England and Wales, where the mortality *is now much lower*, the same number of births produces a constant force of 61,215 men at that age; and at other ages similar disparities in the number living exist. *Now, they add, the mortality was not much less in all England formerly than it is now in Manchester;* and the great diminution in the mortality of England evidently took place at such a period of the last and present centuries as left proportionately more survivors, at the ages 20-40, in 1851, than at the corresponding ages in 1821, for the dangers and loss of life incurred by the generations born in the 20 years, 1781-1801, were greater than those which were encountered by the generations born in 1811-31.

We may observe here that Mr. Porter laid it down as a rule that the proportionate number of children born in any country could not be taken as a test of the condition of the people as to numbers; for, he continues:—

> "It is well known that in climates where the waste of human life is excessive, from the combined causes of disease and poverty affecting the mass of the inhabitants, *the number of births is proportionately greater than is experienced in communities more favorably circumstanced.* Frequently, and indeed almost always, in old settled countries, the proportionate number of births *decreases with the advance of civilization, and the more general diffusion of the conveniences and luxuries of life.* In fact," he adds, "the population does not so much increase because *many are born*, as because few die."[*]

The proper test is therefore that which the Census Commissioners have adopted; namely, the number of persons which a given number of births will sustain at the several ages through life.

Mr. Sang, indeed, takes an exception in favour of early deaths, arguing that they indicate an *increasing* population rather than otherwise. Thus, he says:—

> "Whenever we have an *increasing* population, *the ratio of early deaths* to the *total number of deaths* is necessarily higher than its ratio to the number born, and thus a large proportion of early deaths is in some degree an index to the increase of the inhabitants. This is very conspicuous in the return before us; thus out of 1000 deaths in the undermentioned localities, we have the following proportions occurring in the first year:—

Manchester and Salford	263	Leeds	278
Liverpool	257	Birmingham	245
England and Wales	214		

The large proportion of early deaths, he adds, "is thus no index to the unhealthiness of the district, unless it be accompanied by a true census of the inhabitants."

The Registrar-General goes more to the root of the question. He says, in his Sixteenth Report, that the deaths of 17 persons in 1,000 may be considered, in our present imperfect state, *natural deaths;* and ALL THE DEATHS ABOVE THAT NUMBER MAY BE REFERRED TO ARTIFICIAL CAUSES. He refers to a previous report (the 15th) where he had shown that *licensed victuallers*, *butchers*, *miners*, *bakers*, *shoemakers*, *tailors*, and *labourers* (not agricultural) experienced a much higher rate of mortality than farmers ; and added :—

> "The unhealthy occupations of the people, therefore, contribute to raise the annual mortality above the rate of 17 in 1000. Where the *women* are employed in any but domestic labour, *they discharge the duties of mothers imperfectly, and the mortality of their children is high.* The children in the mining districts, in the straw-plait and lace districts, and in the factory districts, suffer evidently from the want of wise, assiduous maternal care. The *marshes* in low ill-drained districts raise the mortality above 17 in 1000. Thus in Ely, Whittlesea, Wisbeach, and North Witchford, four thinly-peopled marshy districts of Cambridgeshire, round the Wash, the mortality was at the rate of 23, 25, and 27 in 1000. The districts on the lower portions of the Thames suffer from marsh diseases. All our Dock-yards, except Pembroke, are on unhealthy sites. One of the greatest and most prevailing causes of ill-health, and of the deaths in excess of 17 in 1000, is the condensation of people in towns, *without the requisite mechanical and chemical arrangements for removing concentrated impurities, for supplying pure water, and for introducing, through large streets, free currents of pure air.* To be beyond the reach of these causes, this population must be distributed on higher grounds, over wider spaces, on which the sun can shine and the breezes of heaven blow: proper sanitary arrangements must be made, and energetic means be adopted to obviate by art all the artificial disadvantages of life in cities."

We see, then, that in order to grapple with the evils which now exist, as affecting the prolongation of life, *physical*, rather than general, education is required. Even this could not entirely remedy the influence of *occupation*, however much it might, and would, overcome that of *locality;* for, as Dr. Farr has remarked, with his usual clearness, the occupations of men in towns are mostly carried on in-doors, often in crowded workshops, while the agricultural labourer spends the greater part of the daytime in the open air. From the nature of the particles of animal matter thrown into the atmosphere, it is impossible to place the artizan in circumstances as favourable as the labourer ; the sun and wind destroy and waft away the breath as soon as it is formed ; but in the workshops of towns the men are shut from the sun, and no streams of the surrounding air carry off the steaming and perspiration, so that the mortality of working men in the metropolis is much greater than the mortality of women at the corresponding ages. This fact induced him, in estimating the effects of density of population in districts, to take examples from observations upon females.

We believe that an acquaintance with the preceding facts and considerations cannot fail to be productive of good. By the aid of such knowledge the insurance agent possesses a ready means of opening up topics of conversation which, while they are of themselves interesting to his auditors, may at any moment be extended to the purpose more immediately before him, viz., the many dangers by which life is surrounded—its consequent uncertainty; and hence the necessity of making suitable provision for such emergencies. That Life Assurance affords the greatest facilities for accomplishing this, any intelligent agent should be able to show; and we purpose, hereafter, to furnish some useful practical illustrations on this point.

CHAPTER VI.

RESULTS OF THE CENSUS.

The beneficial results, accruing from a proper enumeration of the people, present themselves in such a variety of forms that we shall only attempt to point to a few of them. In every branch of inquiry connected with the science of life contingencies, the advantages have been inexpressibly great. Observations which were before limited, and subjected to distortion by local influences' have now become extended and corrected. Inferences, before doubtful, have now become strengthened and confirmed, and facts once confined to the knowledge of a few, have at length become popular and instructive. As an instance, we have already seen one of the best statistical writers of his day, Mr. Porter, late of the Board of Trade, speaking of the deaths in 1821 as bearing the proportion of only 1 in 60 of the living, and drawing conclusions therefrom, while with all the improvement which has taken place since that period they are *now* 1 in 45, and must have been still more frequent at the period spoken of. Another great advantage is that these returns enable us to test our own internal strength, or in other words the *strength of the nation.* We are thus enabled to contrast our position with that of other countries, and to furnish conclusions and deductions for the statesman as well as the political economist.

We have already seen that it was only at the commencement of the present century that these periodical enumerations were introduced in to this country. Nearly every European state—with the exception of *Turkey!*—now has a census of its population taken with more or less accuracy, and at periods more or less remote. With some few exceptions—and until quite recently Scotland and Ireland might rank with these—they all have a perfect system of registering every birth, marriage, and death. In countries where the representative system is wholly, or partly, based on numbers, as in the United States, a correct system of enumeration is almost indispensable. There is one peculiarity about the continental enumerations, or some of them—France and Russia to wit—they do not record the ages of the living. With us this is made an especial point, and many interesting and important deductions may be drawn therefrom, in proof of which we may quote the following passage from the report of the 1851 census :—

> "Mr. Rickman noticed, that in 1821 and 1831, the number of males in Great Britain under 20 years of age and the number above 20 were nearly equal. The Census of 1851 reveals a very different state of things. The increase in the young population (under 20) since 1821 has been rather more than 5,000,000; the increase in the adult population (above 20) has been more than 4,000,000. The males at the soldier's age of

> 20 to 40 amonnted to 1,966,664 in 1821, and to 3,195,496 in 1851; the increase in the 30 years is equivalent to a vast army of more than 1,200,000 men. While the population under 20 increased 37 per cent., the population between 20 and 40 increased 60 per cent. Assuming, as may be fairly assumed, that the population under the age of 10 years, and the great bulk of the population of the age of 70 and upwards, are chiefly sustained by the industry of the population living in the middle period of life, extending from the age of 20 to the age of 60, it will be found that in 1821 the 6,367,991 persons of the middle age sustained 4,355,166 children and old persons, or 68 per ceent., of their own number; while in 1851 only 5,797,225 in ineffectives by age (57 per cent.,) were sustained by 10,082,296 of effective population. Tested by these facts, the strength of the nation has increased faster than its numbers."

In the census returns of 1851, or rather the report founded upon them, there is a great deal of information that is more curious than useful, or perhaps we should say, that combines both these qualities. Here are some facts illustrative alike of the facilities of locomotion, the requirements of commerce, and the wealth and intelligence of the people, as illustrated in their love of foreign travel. There were absent from Great Britain and Ireland, on the 31st March, 1851, about *a quarter of a million of persons.* This, indeed, included the army, navy, marine and merchant service, numbering 162,490 persons belonging to England, and 49,704 belonging to Ireland; but still having no less than 33,775 British subjects resident or travelling in foreign countries, and these were thus distributed:—In France, 20,357; Belgium, 3,828; Russia, 2,783; Two Sicilies, 1,414; Turkey, 1,235; Sardinian States, 1,069; Greece, 1,068; Mexico, 755; China, 649; Saxony, 321; Alexandria, 155; Cairo, 85; Persia, 33; Tripoli, 23.

Then we are told where the people at home were born, of whom, after the above deductions, there were 20,959,477. Of *these,* 17,234,490 were born in England and Wales, 2,754,360 in Scotland, 122,808 in the Islands in the British Seas, 733,866 in Ireland, 41,316 in the British colonies, and 72,637 abroad; 12,774 of the latter being British subjects. Of foreigners in Great Britain, there appeared to be, 56,665.

Also, that the number of separate families in Great Britain, was 4,312,388, averaging nearly *five* persons to each family. That there were 3,648,347 inhabited houses, averaging more than 5½ persons to each house. The inhabited houses have nearly doubled during the past half century, and upwards of *two millions* of new families have been founded! Notwithstanding this there were no less than 1,413,912 bachelors between 20 and 40 years of age, and 1,407,225 spinsters of the same age—to say nothing of *three hundred and fifty-nine thousand, nine hundred and sixty-nine old maids* above 40 years of age!

We also learn a good deal about the *occupations* of the people—which may be turned to good practical account by the Life Offices—more especially by those transacting *industrial* business; also by the "class offices." The following is a list of the occupations in which more than 20,000 persons were engaged in 1851:—

Agricultural labourers, farm servants, shepherds	1,460,896
Domestic servants	1,038,791
Cotton, calico manufacture, printing, dyeing	501,465
Labourers (branch undefined)	376,551
Farmers, graziers	306,767
Boot and shoe-makers	274,451

Milliners and dress-makers	267,791
Coal-miners	219,015
Carpenters, joiners	182,696
Army and navy (exclusive of Indian army and navy)	178,773
Tailors	152,672
Washerwomen, manglers, laundry-keepers	146,091
Woollen-cloth manufacturers	137,814
Silk manufacture	114,570
Blacksmiths	112,776
Worsted manufacture	104,061
Masons, paviours	101,442
Messengers, porters, and errand boys	101,425
Linen and flax manufactures	98,860
Seamen (merchant service) on shore or in British ports	89,206
Grocers	85,913
Gardeners	80,946
Iron manufacture, moulders, founders	80,032
Innkeepers, licensed victuallers, beer-shop keepers	75,721
Sempstresses, shirt-makers	73,068
Bricklayers	67,989
Butchers, meat salesmen	67,691
Hose (stocking) manufacture	65,499
Schoolmasters and mistresses	65,376
Lace manufacture	63,660
Plumbers, painters, glaziers	62,808
Bakers	62,471
Carmen, carriers, carters, draymen	56,981
Charwomen	55,423
Drapers (linen and woollen)	49,184
Engine and machine makers	48,082
Commercial clerks	43,760
Cabinet-makers, upholsterers	40,897
Teachers (various) governesses	40,575
Fishermen and women	38,294
Boats, barges—men and women	37,683
Millers	37,268
Earthenware manufacture	36,512
Sawyers	35,443
Railway labourers	34,306
Straw-plait manufacture	32,062
Brick-makers, dealers	31,168
Government—civil service	30,963
Hawkers, pedlars	30,553
Wheelwrights	30,244
Glovers	29,882
Shopkeepers (branch undefined)	29,800
Horsekeepers, grooms (not domestic) jockeys	29,408
Nail manufacture	28,533
Iron miners	28,088
Printers	26,024
Nurses (not domestic servants)	25,518
Shipwrights, shipbuilders	25,201
Stone quarriers	23,489
Lodging-house keepers	23,089
Lead miners	22,530
Copper miners	22,386
Straw-hat and bonnet-makers	21,902
Coopers	20,245

In the list of the occupations of women there were 88 authoresses, 18 editors and public writers, 643 actresses, 135 danseuses, 16 equestrians. Of the female domestics, no less than 675,311 were entered under the denomination of "general servants." Of the higher class of servants, the housemaids were more numerous than the cooks, the former being 55,935, and the latter only 48,806; and there were above 50,000 "housekeepers," and nearly 40,000 "nurses;" not to mention 55,423 "charwomen."

The excess of females over males has already been remarked upon, as well as their greater duration of life. This excess appears not only to apply to England, but to be almost a universal law, as far as returns have at present been obtained. The exceptions will be newly-peopled countries, where the chief immigrants are males. Dr. Farr has obtained and compiled the following returns—they relate to the "seven great powers" of the world:—

	Date of Census.	Males.	Females.	Totals.
England	1851	13,687,545	14,137,729	27,825,274
France	1831	17,794,964	17,968,206	37,783,170
Turkey	1844	17,533,124	17,816,876	35,350,000
Austria	1840	18,202,631	18,747,770	36,950,401
Prussia	1849	8,162,805	8,168,382	16,331,187
Russia	1855	33,448,093	33,989,414	67,437,507
United States of America	1850	10,026,402	9,526,666	19,553,068

In no case is the excess so marked as in England. In the United States the excess is the other way. But the most remarkable instance of the reverse of this rule was perhaps at the census of the colony of Victoria, in Australia, on the 26th April, 1854. The total number of persons of all ages in the colony was 236,798, of whom 155,876 were males, and 80,900 females—the disproportion being 193 males to every 100 females. If, however, the observations be confined to ages under 15, the proportions right themselves, being 30,996 males and 30,383 females—a slight majority only in favor of males. In the regions of the gold-fields, at Melbourne, there were 52,542 males and 14,152 females. Scotland shows a greater proportion of females than almost any other country: they stood in 1851 in the proportion of 110 to every 100 males. In England, as we have seen, the proportion is 105 females to 100 males.

This disparity is the more remarkable when it is remembered that in births the proportion of males is always the greatest. The circumstance is accounted for in two ways: first, that the mortality of males is greater by reason of their constant exposure to hazardous pursuits—the dangers of the army and navy, and the risk of residence in foreign climates—not to add another important item—the numbers annually carried off by drinking. Secondly, inasmuch as the female duration of life is greater than that of the male, there will always be more of the former than the latter living out of any given number.

Not only, however, is female life of longer duration than male life, but its epochs are differently marked. We believe it was Deparcieux who first noted this fact—his Tables were certainly the first to confirm the greater value of female life. We have somewhere met with the following just observations on this point, but do not remember their source:—

> "From a comparison of the ratio of mortality among the government males with that of the females, it is evident that there are few or no points of analogy between the two. Differing in habits of life (continues the writer) almost as much as in organization, a correspondence *a priori* was not to be expected. And, while more regular habits of life in the female give her a superior vitality, the difference in organization gives rise to the different rates of mortality at particular ages. Thus, at 14, the mortality of the female, previously less, approximates very nearly to that of the male. That critical period over, the female life seems to rise in value with an elastic spring until 25, when a reaction takes place; the impetus previously communicated losing its force with the lapse of years. The stream of life again begins to run with a stronger current

about 35, and increases till the limit of 45, when natural causes again produce a languid flow, so that for a few years female life is actually inferior to male. After that period, as may be expected, it again rises in value, but shortly declines. For these reasons, we may hold that the ages of 14 and 45 are the two hinges upon which female life turns—its rise and decline being attributable to similar causes. There may, therefore (adds the writer), be some question as to the propriety of estimating female life, at all ages, by the same Tables which apply exclusively to male. If assurances are effected for the whole period of female life, *the premiums should be less than for males of the same ages.*"

A careful perusal of the following Table will confirm the soundness of these views. The figures apply to the years 1837 and 1838, and show the computed proportions of males and females living in those years, at the different ages set forth in the first column. Particular attention should be paid to the variation in the figures of the last column.

Age.	Males.	Females.	Excess of Females.	Age.	Males.	Females.	Excess of Females.
0 to 5	1,177,419	1,201,944	24,525	55 in 60	254,862	266,756	11,894
5 „ 10	955,494	986,812	31,318	60 „ 65	206,984	220,019	13,035
10 „ 15	859,142	888,751	29,609	65 „ 70	158,684	173,107	14,423
15 „ 20	776,624	800,449	23,825	70 „ 75	111,601	126,182	14,581
20 „ 25	691,955	710,826	18,871	75 „ 80	69,768	82,088	12,320
25 „ 30	611,544	626,081	14,537	80 „ 85	36,351	44,637	8,286
30 „ 35	539,250	549,829	10,579	85 „ 90	13,689	17,511	3,822
35 „ 40	473,768	482,059	8,291	90 „ 95	3,534	5,275	1,741
40 „ 45	413,020	421,420	8,400	95 „ 100	693	1,235	542
45 „ 50	356,412	366,178	9,766	100 „ 105	117	174	57
50 „ 55	303,973	314,997	11,024	above 105	10	28	18

Total, Males 8,014,894. Females, 8,286,358. Excess of Females, 271,464.

The proportion of baptisms in England was as follows during the following years:—

	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
Girls ...	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Boys ...	1048	1047	1047	1041	1049	1046	1047	1043	1043	1034

In 1831 the births were:—

Males	286,821
Females	285,175
Leaving the excess of Males	1,646

which was very much below the average. Of these numbers 39,990 males and 31,898 females died in the first year, being "not quite one-seventh of the boys and just one-ninth of the girls." So that by the end of the first year the girls had obtained a majority of 6,446.* The proportion of male *births* being unusually small, and of deaths unusually large.

The density of the population of cities has already been referred to. The following calculation was made a few years since, with respect to the *proportionate* density of population in different countries:—

Iceland	1	England	152
Sweden	14	France	163
Turkey	36	Upper Italy	172
Poland	33	Naples	182
Spain	63	Venice	196
Ireland	99	Holland	124
Switzerland	114	Malta	1103
Germany	127		

Dr. Guy has deduced the following facts, bearing upon this point, from the Registrar's Returns:—Population in England to the square mile—country, 199; town, 5,100. Annual deaths in one million of the population—country, 19,300; town, 27,073: annual excess in town districts, 7,733. Rate of mortality—country, 1 in 52; town, 1 in 37. General mortality—England, 1 in 45; Isle of Wight, 1 in 58; Anglesea, 1 in 62; London, 1 in 39; Leeds and Birmingham, 1 in 37; Sheffield, 1 in 33; Bristol, 1 in 32; Manchester (union), 1 in 30; Liverpool (parish), 1 in 29. Thus the inhabitants of London, compared with England at large, lose eight years of their lives; of Liverpool, 19. The population of large towns, in England, being 4,000,000, the annual loss, by town residence, is between 331,000 and 332,000.* All towns, however, are not equally unhealthy:—

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* Sang, on Life Assurance

	Annual Deaths per 1000.
In Liverpool	35
„ Manchester	32
„ Bath Coventry Derby, Dudley, Shrewsbury, and Sunderland	26
„ Carlisle and Norwich	25
„ Tynemouth	23
„ Halifax and Kidderminster	21

While town and city life appears so detrimental to the body, it does not seem to affect the mind so injuriously, except that undue stimulation may be proved injurious. Dr. Guthrie, of Edinburgh, has recently pointed out, in a very eloquent manner, that amidst the crowding and confinement of city life the mind finds its fullest and freest expansion. "Unlike the dwarfed and dusty plants (he says) which stand around our suburban villas, languishing like exiles for the purer air and freer sunshine that kiss their fellows far away in flowering field and green woodland, on sunny banks and breezy hills, man reaches his highest condition amid the social influences of the crowded city. His intellect receives its brightest polish where gold and silver lose theirs—tarnished by the searching smoke and foul vapours of city air. The finest flowers of genius have grown in an atmosphere where those of nature are prone to droop and difficult to bring to maturity. The mental powers acquire their full robustness where the cheek loses its ruddy hue, and the limbs their elastic step, and pale thought sits on manly brows, and the watchman, as he walks his round, sees the student's lamp burning far into the silent night."

The results of the Census furnish us with the means of comparing and contrasting not only this country with others, but the peculiarities of different districts or portions of the kingdom. From the last Census Report we gather the following particulars:—

Scotland differs from England in the numbers, and in the density of population; the rates of the people's increase; in the proportion of males and females; and in the proportion of men and women in the married state. In Scotland, there are 110 females to every 100 males at home; in England and Wales, only 104 females to 100 males at home. In Scotland, 49 women in every 100 of the age of 20 and upwards are returned as *wives*. In England and Wales, 59 women in every 100 of the same age are married.

In Scotland, the population has increased rapidly since 1801, and the increase in fifty years has been at the rate of 74 per cent.; but in England the increase in the same time has been 97 per cent. The population of Scotland was to the population of England as 18 to 100 in 1801; and as 16 to 100 in 1851.

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* For more recent information on this important question see Twentieth Report of *Registrar General, p. 175. Note, 1866.*

The density of population in Scotland was such in 1851 that on an average there were 92 *persons to a square mile; while in England there are* 307 *persons to a square mile.* The mean proximity of the people is such in Scotland that they are on an average 197 yards apart. In England the proximity is 108 yards.

Seven per cent., or 207,367 of the inhabitants of Scotland *are natives of Ireland;* while 519,959, or *three* per cent. of the inhabitants of *England* are *natives of Ireland.* There were in 1851, 130,087 *natives of Scotland* in England, or 7 in every 1000 of the population of England; and 46,791 *natives of England in Scotland,* or 16 in every 1000 of the population of Scotland. Scotland has sent 47 per 1000 of its population to England; England and Wales $2\frac{7}{10}$ per 1000 of its population to Scotland. Scotland maintains 2,922,362 people on 20,047,462 acres of territory, or nearly 7 acres per man; England has 18,054,170 people living on 37,324,915 acres of territory, or little more than 2 acres each.

"As the population in Scotland" say the Census Commissioners of 1851, "is to the population in England and Wales nearly as 1 to $6\frac{1}{3}$, it is evident from the above numbers that the proportion of Englishmen in the population of Scotland is *twice as great* as the *proportion* of Scotchmen in the population of England. Upon the other hand 130,087 Scotchmen had crossed the Tweed and entered England, while 46,791 Englishmen had passed the borders of Scotland; so that of every 100,000 persons *born in England and Wales,* 271 were found in Scotland while of every 100,000 persons *born in Scotland,* 4,723 were *enumerated in England;* and the tendency of the people born in Scotland to enter England has hitherto been *seventeen* times as great as the tendency of the English to enter Scotland." This is a result which the public generally will be prepared for.

With respect to *Ireland,* the Census Report furnished many particulars painfully curious, as well as historically useful. These are ably condensed in the *Athenæum* of July 12, 1851, and we gladly avail ourselves of the writer's labours:—

> "Ireland has long been a mystery and an anomaly in the West of Europe. When it had existed for four centuries, in a chronic state of anarchy and rebellion, the country was almost depopulated under the last of the Tudors and the first of the Stuarts. After the savage and sanguinary rebellion of 1641, it was conquered and chastised by Cromwell, as few countries in historical records have ever been; and in the next generation the arms of the Prince of Orange again swept the land of its ill-fated inhabitants. If the returns made by Sir William Petty and Captain Smith may be trusted, the population fell one-fourth between 1672 and 1695. During the 50 years then drawing to a close, a large and influential settlement of English took place in the North. Manufactures were introduced by these new and industrious settlers; the old population was governed by the strong arm of authority; and, strangely enough, after the war with William, as had been the case after that with Cromwell, the country rose out of its depth of poverty and misery; agriculture and trade revived; and the Counties of Ulster—hitherto a wild and desolate region—began to assume something the appearance of Kent and Norfolk. Between 1695 and 1754 the population increased from 1,034,102 to 2,372,634. From this time there was a steady increase, the numbers for 1791 being returned in the hearth-money estimates at 4,200,612—and those in the *first Census,* that of 1821, at 6,801,827. From 1821 to 1831 the progress of the population was rapid in the extreme for Ireland—the rise being no less than 965,574 souls, or about 14 per cent. in the decade. This, however, was the period of greatest increase. Between *1831 and 1841* the sum total of the increase fell to 407,723, or about $5\frac{1}{3}$ per cent. In

> the last decade, just published in the Census Returns, we have the astounding result, not merely of a failure to maintain the old rates of progress, but of a vast positive decrease in the population. In 1841, the population of Ireland was, in round numbers, 8,175,000;—it is now, for 1851, returned at 6,500,000. At first sight (adds the writer) these figures seem to tell an incredible tale. They startle belief by the novelty of the facts which they indicate. In the English mind, progress has become of late years an apparently fixed law of nature; and on finding a bold and emphatic denial of that onward rule in close proximity to our own shores, and in a country bound to us by so many ties, we feel our ideas rudely and painfully shaken. . . . . In Ireland, not less than a quarter of the inhabitants has been cut off or removed in ten years, a fact with hardly a parallel in history. Cromwell's destroying sword and inexorable policy were as nothing to the more effective causes which have recently been in operation. His stormings and forced expatriations cleared that soil of some thousands—the new victims of poverty, cholera, famine, fever, despair, and emigration, are to be counted by millions!"

Happily, during the last few years, a change for the better has again set in Long may it continue!

The variety of information brought together in the Census Report is so extensive that, although mostly directly or indirectly associated with the subject of this volume, it would be hopeless to continue to follow it out in anything like detail. In one place we are told that there were in Great Britain and the Islands of the British seas in 1851, 21,487 persons totally blind—being in the proportion of 1 to every 975 persons. In another that in the same year there were 12,553 persons deaf and dumb: being one deaf mute to every 1,670 inhabitants. Or opening at a third place, we are appalled to find that, on the 31st March, in that same year of prosperity, there were 26,855 inmates in the various prisons, convict-depôts, and hulks of Great Britain! Of these 22,451 were males and 4,404 females—the united proportions being 1 in 785 of the whole population.

Passing over these, other indications of misery present themselves. The returns of the Poor Law Board in the year 1851 gave the total number of persons receiving relief, as *paupers*, in England and Wales, at upwards of 800,000. Of these, 126,488 were inmates of workhouses, being in the proportion of 1 in-door pauper to every 142 inhabitants—or 7 in every 1,000. In *Scotland* the number of paupers was 76,906—of these, however, but 5,438 were receiving in-door relief. In England, the male paupers exceed the females; in Scotland, the proportions are reversed.

The unfortunates come under two classes—the "Homeless" and the "Houseless;" and they fully illustrate a time-worn adage that one half the world does not know how the other half lives. Of the first of these classes there were, in March, 1851, 295,856—*two hundred and ninety-five thousand eight hundred and fifty-six* persons living in the various hospitals, workhouses, barracks, prisons, asylums, and other charitable institutions of the country; being in the proportion of 178,041 males to 117,815 females.

The "Houseless" are divided into two sections, 1.—Gipsies, beggars, criminals, and the like, together with some honest but unfortunate people; and 2,–persons in barges and in sea-going vessels in ports, or engaged in inland navigation. In 1841, the former class amounted to 22,303. In 1851, it happily only numbered 18,249—in the following proportions:—Sleeping in *barns* on the night of the

Census, 7,251 males, and 2,721 females. Total in barns 9,972. In the *open air*, or in tents, 4,614 males, and 3,663 females, together 8,277, making up the 18,249 stated. Of the second class, there were in *barges*, 10,395 males, and 2,529 females, together, 12,924. In vessels in the ports, and engaged in inland navigation, 7,730 males, and 845 females, together, 8,575; and in sea-going vessels in the ports 41,165 males, and 2,008 females, together, 43,173, making a total in the second class of 64,672; and a grand total of houseless people, 82,921!–being in the proportion of nearly seven males to one female.

We reserve, perhaps, the most truly unfortunate class till the last. There were confined in the various lunatic asylums, and other institutions for the reception of the insane, in 1851, no less than 18,803 persons. Of these 8,999 were males, and 9,804 females; and lunatic paupers in workhouses were not included in these returns.

The proportion which lunatics in asylums bear to the general population of Great Britain is, 1 in every 1,115 inhabitants. To every 100,000 males, and 100,000 females living, there were 88 males and 91 females in these institutions. By an examination of the former occupations of these unfortunate people, it will be seen, that the educated and professional classes furnish many cases of insanity. Of clergymen and ministers, 84 were returned; barristers and solicitors, 88; physicians and surgeons, 108; officers in the army and navy, 95; the East India service, 118; schoolmasters and teachers, 258. Amongst the largest items are labourers, 1794; female domestic servants, 1,753; shoemakers, 364; weavers, 240; and tailors, 224. These figures, however, only apply to about half the number of sufferers, as in 7,674 instances the former occupations were not returned.

It is stated, on the authority of Dr. Andrew Halliday, that insanity has more than tripled within the last twenty years! and he points to it as being more extensive in *France*, "in proportion to its population than in most other countries."

Of one thousand *male* patients, insanity was supposed by another eminent authority, to be traceable to the following causes relatively:—*

Drunkenness	110	Accidents	39
Consequences of disease ...	100	Religious enthusiasm	29
Epilepsy	78	Unnatural practices	27
Ambition	73	Political events	26
Excessive labour	73	Poisonous effluvia	17
Born idiots	71	Ill usage	12
Misfortunes	69	Crimes, remorse and despair ...	9
Old age	69	Pretended insanity	5
Chagrin	54	Malformation of the skull ...	4
Love	47	Other and unknown causes ...	88

Speaking of *idiots*, as distinct from lunatics, the following figures represent the latest returns. In *England*, pauper idiots, or idiots protected in national institutions:—Males, 3,372; females, 3,893.—Total, 7,265.

And this doleful picture brings to a close our remarks on the Census.

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* Vide Haydn's Dictionary of Dates.

CHAPTER VII.

LONGEVITY.

The Census Commissioners, from whose labours and learning we have already derived great assistance, left no part of their subject unconsidered; and we are desirous, as far as possible, to follow their example. "The prolongation of the life of the people," they say, "*must become an essential part of family, municipal, and national policy.* Although it is right and gracious to incur risk, and to sacrifice life for public objects, it has always been felt that *length of days* is the measure, and that the completion by the people of the full term of natural existence, is *the groundwork of their felicity.*" One of the most recent writers on the subject, Bailey,[*] thus appropriately introduced it to his readers :—

> "As there is nothing in the whole compass of sublunary affairs of equal importance to mankind, whether in the abstract, or concrete, with the preservation of the lives of the species, so there are few things of greater interest to the student of human nature, whether the professional physiologist, or only the common inquirer into the origin of things around him, than those remarkable departures from the ordinary duration of life, by which some favoured individuals of our race have been distinguished."

Another writer, well known in the assurance world, from his continuous contributions to the science of Life Contingencies, Mr. Samuel Brown,[†] has declared that "the lives of men are more in their own keeping, and with a heavier responsibility, than they are willing to admit," adding, "and when they have availed themselves, without success of the aids which their own common prudence, or the advancement of science, can suggest to remedy the evils which beset them, it will be time to complain of the neglect of Government, or the decrees of unavoidable fate." With these views we entirely coincide, and hence adopt them for our introduction.

Those who have written or thought much on the subject of longevity have, for the most part, become wonderfully enamoured of their theme. They agree almost to a man that it is in our own power not only to prolong our days, but also greatly to increase our enjoyment of life. Cornaro, at the age of 85, writes, "The spirit increases in perfection as the body grows older." Fontenelle declared that the happiest years of his life were between the fifty-fifth and the seventy-fifth. Buffon, at the age of 70, as if addressing himself to youth, says, "Every day that I rise in good health, have I not the enjoyment of this day as immediately and as fully as you have? If I conform my movements, my appetites, my desires to the impulses of a wise nature alone, am I not as wise and more happy than you? And the view of the past, which awakens the regrets of old fools, offers to me, on the contrary, the enjoyments of memory, agreeable pictures, precious images, which are worth more than your objects of pleasure; for they are pleasant these images, they are pure, they call up only amiable recollections. The inquietudes, the chagrins, all the troop of sadnesses which accompany your youthful enjoyments, disappear in the picture which represents them to me. Regrets ought to disappear in like manner; they are only the last flashes of that foolish vanity which never grows old." "Patience," says M. Reveillé Parise, "is the privilege of old age. A great advantage of a man who has lived long is that he knows how to wait. In the old man everything is submitted to reflection." "In youth," says M. Flourens, "the attention is quick, lively, always on the alert; fixes itself on everything, but reflection is wanting. In manhood, attention and reflection are united, and this constitutes the strength of manhood. In old age attention lessens, but reflection increases; it is the period in which the human heart bends back on itself, and knows itself best." Cicero also joins in the "sweet praises;" and old Cornaro, more playfully than before, adds, "and then how advantageous to live long, for if one is a Cardinal, he may become a Pope as he grows older; if he occupy a distinguished place in a republic, he may become its chief; if he be a learned man, or excel in any art, he may excel in it still more."

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[*] Records of Longevity: Darton and Co., 1857.

[†] Thoughts on Life Assurance.

"Long life," says Hufeland, the famous German physician, who flourished at the close of the last century, and from whose clever book, the *Art of Prolonging Life*, we shall have frequent occasion to quote, "has at all times been the chief wish, the principal object of mankind; but how confused and contradictory are all the plans ever proposed for obtaining it! The stern theologist derides such attempts, and asks if the period of existence is not determined to every human being—and who is able to add a hair-breadth to his stature, or a minute to the duration of his existence? The practical physician exclaims, why do you search for the particular means of prolonging life? Employ my art, take care of your health, guard against diseases, and cure those which have appeared. This is the only way to promote longevity. The adept shows his vital elixir, and boldly asserts that those who will persevere to take that incorporated spirit of life, may hope to become old. The philosopher endeavours to resolve the problem, by teaching men to despise death, and to double life by enjoyment. The innumerable legion of quacks and empirics, on the other hand, who have gained the confidence of the multitude, inspire them with a belief that there are no surer means of becoming old than to let blood at proper times, and to use cupping, purgatives, &c."

He attributes this "love of life" to the influence of what he terms the *vital principle*, which pervades all nature, and is under the immediate influence of the Deity. "It need," he says, "excite no surprise, therefore, that the most perfect possessor of this benefit should value it so highly; and that the bare idea of living and existing should be attended with so much pleasure. To those even who are deprived of its comforts and enjoyments, to those who suffer under the pain of miserable disease, or who bewail the loss of freedom in the gloom of a dungeon, the idea of living and existing presents some charms; and it certainly requires a derangement of the finest organs of sensation, a circumstance possible only to man; a total darkening and deadening of the mental faculties, to render life to us either disgusting or indifferent. . . . It was very natural for men, therefore, to conceive the idea whether it might not be possible to prolong our existence, and to give more extent to the too fleeting enjoyment of so valuable a blessing. This question, indeed," he continues, "has at all times engaged the attention of mankind, and in different ways. It has been a favorite object of the deepest thinking minds, and it has been a fine field for visionaries."

In another place he remarks that we are continually surrounded by the friends and the enemies of life; adding, he who keeps company with its friends will become old; but he who prefers its enemies will shorten his existence, ... The enemies of our life have, in modern times, dreadfully increased; and that degree of civilization, luxury, refinement, and deviation from nature, in which we at present live, by so highly exalting our extensive life, tends also to shorten, in the same proportion, our existence. "We shall find," he says, "on close examination, that men appear, as it were, *to have anxiously studied how they might deprive each other of life secrtly and imperceptly, and often in the most ingenious manner possible.* Much more precaution and attention are therefore now necessary, in order to secure ourselves from danger." What these friends and enemies are will be indicated as we proceed. One of his conclusions indeed should be recorded without delay. It is that *length of days can only be secured and enjoyed by leading a virtuous life.* Listen!

> "I can, at any rate, assert that man will in vain seek for the one without the other; and that *physical and moral health are as nearly related as the body and the soul.* They flow from the same sources; become blended together; and when united, the result is HUMAN NATURE ENNOBLED, AND RAISED TO PERFECTION."

In dealing with this subject we intend, as much as possible, to confine ourselves to plain rules, easy of comprehension, and also easy of adoption. We believe literally that every man may be his own physician, and we shall not therefore talk of destiny, or even of lucky stars, or fortunate constellations. We are here reminded of a circumstance narrated of one Marsilus Ficinus, who, a century or two ago, wrote a treatise on the prolongation of life, and therein advised all prudent people to consult an astrologer every seven years, in order that they should be apprised of the dangers which might threaten them during the following seven; and in particular to respect and to use properly the means of the three holy kings—gold, frankincense, and myrrh. Also how M. Pansa, in the year 1470, dedicated to the council of Leipsic a book, in which he strongly advised these gentlemen, above all things, to make known their favorable and unfavorable aspects, and to be on their guard every seven years, because Saturn, a hostile and malignant planet, ruled at those periods! Happily our nativities have been cast at a more enlightened period, and we now know that plain living, warm clothing, and common sense observations and precautions will do more for us than talismans and amulets did for our well-meaning, but too often misguided, forefathers.

Instead of gold, frankincense and myrrh, Hufeland speaks of *light*, *heat*, and *air*, as the "*three celestial gifts*, which with great propriety may be called the friends and guardian spirits of life,"—and of darkness, cold, and a confined atmosphere, as possessing just the opposite qualities. "The life of every created being is the more perfect the more it enjoys the influence of light." Every man who passes his life in darkness, becomes pale, relaxed, and heavy, *and at length loses the whole energy of life;* as is proved by the many melancholy instances of persons shut up in gloomy dungeons; and he believes that "organised life is *possible* only under the influence of light, *or in all probability through it.*" Cold, he speaks of, as "the great enemy of all life." "No being can live entirely without air; and sudden, sometimes instantaneous, death is to most of them the consequence of its being withdrawn." "*Water* also," he says, "belongs to the agents friendly to life, so far as it contains oxygen; and it certainly promotes life, *for without fluidity no expansion of life is possible.*"

These considerations lead us to the inquiry—What is Life? Lord Bacon, in his great wisdom, compared it to a *flame*, which is continually consuming and consumed. Hufeland takes up the figure. "The process of life may, then, be considered as a continued process of consumption; and its essence may be defined an uninterrupted wasting and separation of ourselves. . . . . Destructive and creative powers are engaged, with never-ceasing activity, in a continual struggle within us; and every moment of our existence is a singular mixture of annihilation and new creation. As long as the *vital power* retains its freshness and energy, the living plastic powers will have the superiority, and afford its protection in this contest: the body will also increase and approach nearer to perfection. By little and little they will balance each other, and the consumption becoming equal to the renovation, the body will at length decrease. At *last*, the *vital power being lessened*, and the organs worn out, the consumption will begin to exceed the renovation; and decay, degradation, and in the end the total dissolution will unavoidably follow. This is universally the case. Every created being passes through three periods: that of its growth, that of its being stationary, and that of its decline." In another place he says, "the duration of life in a being will be proportioned to the *innate quantity of vital power*, the greater or less *firmness of its organs*, the speedier or slower *consumption*, and perfect or imperfect *restoration*. All ideas on the prolongation of life, as well as all the means which have been or may be proposed on that subject, can be brought under these four classes, and be examined upon these principles." But still more important, he declares his earnest conviction, after many years earnest study, *that the grounds of a long or short life can be most effectually laid at an early period;* and regrets, as all thinking men must regret, that through unpardonable negligence in the education of youth, information on this subject, so important to their physical happiness, *is entirely forgotten!*

Britain has long been famed for the numbers of instances of longevity it has produced. Sweden, Norway, and Denmark have also furnished some notable instances; but, further north, seventy is an age seldom exceeded. Ireland is even more remarkable than England or Wales; and the annals of longevity abound in cases from the Sister Isle. In France, longevity is not so general, although we find a man died in that country in 1757, aged 121. The same with Italy, yet the northern provinces of Lombardy furnish instances of great age. Spain has recorded a few instances up to the age of 110. Greece is still celebrated in regard to longevity. The Island of Naxos is particularly prominent on this account. In Egypt and India there are some cases of long life, particularly among the Brahmins, Anchorites, and Hermits. Ethiopia formerly was much celebrated for its longevity—it had a tribe called the Macrobii, or "long-livers;" but a contrary account is given of it by Bruce. Some districts of Hungary are particularly distinguished by the great age of the people who reside there. Germany contains an abundance of old persons, but it affords few instances of very long life. In Holland, few people live to the age of 100; nor does Switzerland (generally spoken of as so healthy) afford many instances of longevity. Russia has furnished some extraordinary cases.*

The proportion of inhabitants who attain the age of 80 has been found to be as follows in the places named:—

Pays de Vaud (Switzerland)	1 in 21½
Brandenburgh	1 in 22½
Norwich	1 in 27
Manchester	1 in 30
London	1 in 40
Edinburgh	1 in 42

Out of 10,000 persons buried in each of the following districts, the following proportions only lived to the advanced ages named, viz.:—

In London ...	86	had reached 90; and	2	to 100 years.
England generally	80	„ „	4	„ „
Cornwall	137	„ „	6	„ „
Wales	211	„ „	13	„ „

So that Wales is evidently the locality of the *Ancient* Britons.

At the Census of 1851, 111 men and 208 women returned ages ranging from 100 to 119 years. In reference to these cases the *Census Report* says—

> "Two-thirds of the centenarians are *women*. Several of them in England are natives of parishes in Ireland or Scotland, where no efficient system of registration exists; few of them reside in the parishes where they were born, and have been known from youth; many of the old people are paupers, and probably illiterate;—so that it would no doubt be difficult to obtain the documentary evidence which can alone be accepted as conclusive proof of such extraordinary ages."

In Great Britain and Ireland, during the years 1850 to 1853, there were exactly 1,000 deaths amongst the "Friends;" and out of this number 517 reached 60 years of age or upwards, of whom 353 reached 70 years or upwards, and of them 141 reached 80 years or more. A recent writer, in the *Statist*, says—

> "In a curious publication by M. Lejoncourt, entitled *Les Centenaires Anciens et Modernes*, we have an account of forty-nine persons in England during the last century, who reached from 130 to 180 years of age. Of these seven died at 134, four at 138,

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* Vide Hufeland.

two at 155, one at 159, one at 160, one at 168, one at 169, and one at 175 years. Dr. Bernard Van Oven, in a work on health and longevity recently published, gives a further list of 7,000 persons who attained to the same great ages."

In 1799 a book was published at Salisbury, by James Easton, on "Human Longevity," containing the names of 1712 persons, who had reached the age of 100 years and upwards. Haller had previously published a Table, enumerating 1,111 of such cases; and in 1826 Mr. Charles Babbage made a collection from Easton's books, and from other sources, of 1751 similar cases. His (Mr. Babbage's) object was to construct a comparative Table, to shew the *expectation* of life to persons who had attained that advanced age; and he found that of the numbers recorded by each of the authors named, there died between the ages of 100 and 110:—

	Haller 1000	Easton 1310	Babbage 1278
Between 110 and 120	60	277	330
„ 120 „ 130	„ 29	„ 84	„ 99
„ 130 „ 140	„ 15	„ 26	„ 32
„ 140 „ 150	„ 6	„ 7	„ 12
„ 150 „ 160	„ 1	„ 8	„ 0
„ 160 „ 170	„ 0	„ 2	„ 0
„ 170 and above	„ 0	„ 3	„ 0
	1111	1712	1751

By far the largest number of deaths, both male and female, occurred at the age of 102, but more particularly amongst the males; whilst at the age of 101 the mortality was particularly low. The chances of surviving beyond 150 are exceedingly remote.

But at the commencement of the present year a book was published at Nottingham, compiled by Mr. Thomas Bailey, a literary man and journalist of some note in that town, containing about 3,000 instances of deaths at 100 years and upwards, chiefly in England, Wales, Scotland, and Ireland. From this, and several other sources, we have compiled the Table given at the end of this section. Unfortunately for the book its compiler was removed by death, having reached an honourable age, while it was passing through the press. Hence the various defects in arrangement, &c.; but it will well repay careful perusal.

One of several noticeable points in connexion with the cases given is, that the great majority of the English instances of extraordinary longevity have occurred in the counties lying along the eastern coast of the kingdom, from the northern bank of the Thames. The exceptions are Shropshire (very marked), Cheshire, Staffordshire, and Surrey. Yorkshire, from its extensive area and large extent of coast range, has the largest number of cases, and we cannot fail to be struck with the number of instances of deaths, over 100, which have occurred in London and its immediate suburbs.

Another very noticeable circumstance is that more women than men became old; *but that* MEN *only attain to the utmost extent of longevity*. This fact has not escaped the physiologists. Hufeland thus endeavours to account for it:—The equilibrium and pliability of the female body seem for a certain time to give it more durability, and to render it less susceptible of injury from distinctive influences. But male strength is, without doubt, necessary to arrive at a very great age. More women, therefore, become old; but fewer very old. *In the first half of man's age, an active, even a fatiguing life, is conducive to longevity;* but in the last half, a life that is peaceful and uniform. *No instance can be found of an idler having attained to a remarkably great age. Rich and nourishing food, and an immoderate use of flesh do not prolong life.* Instances of the greatest age are to be found among men who, from their youth, lived principally on vegetables, *and in some cases had never tasted flesh.* A certain degree of cultivation is physically necessary for man, and promotes duration of life. The wild savage does not live so long as man in a state of civilization. To live in the country, and in small towns, is favourable to longevity; to live in great towns is unfavourable, although not to the extent sometimes stated, or supposed. In almost every case of extreme old age, *great temperance as well as frugality of living had been observed.*

Again, it may be noted that nearly all those people who have become very old were *married, mostly, more than once*, and frequently at a very late period of life. Hufeland went so far as to say there was not " one instance of a bachelor having attained to a great age !" And added, " This observation is as applicable to the female as to the male sex ; and hence it would appear that a certain abundance in the power of generation is favourable to longevity. It forms an addition to the vital power ; and this power of procreation seems to be in the most intimate proportion to that of regenerating and restoring one's self; but a certain regularity and *moderation* are requisite ; and marriage is the only means by which these can be preserved. The greatest example of this (he adds) is a Frenchman named Dr. Longueville, who lived to the age of 110. He had been married to 10 wives ; his last wife he married when in his ninety-ninth year, and she bore him a son when he was in his hundred and first." The English records of longevity afford some very similar instances ; and certainly but few bachelors have found a place in the records.

Dr. Fitch, in his well-known treatise on Consumption, gives us the following instances of remarkable longevity in the United States of America :—

"In 1820 a man, named Henry Francisco, died at Whitehall, in the State of New York, aged 134 years: he beat the drum at the coronation of Queen Anne, and was then 16 years of age ; he did not die of old age, but of the ague and fever. John Hightower, residing at Marengo, County Alabama, died January, 1845, aged 136 years. William Prigden, of Maryland, died October, 1845, aged 123 years. The Rev. Mr. Harvey, a Baptist Minister, residing, at the time the Doctor wrote, at Frankfort, in the State of New York, was in the active and useful discharge of his clerical duties at the age of 111. A Mr. Blakewell was residing, a short time previously, at Greenville, North Carolina, aged 136 years ; and a coloured man, Sphynx, was living, about the same time, 'in fine vigorous health,' in Cumberland, County Virginia, at the age of 117 years. Daniel Atkin died at Wrexford, Upper Canada, in 1846, aged 120 ; and M. John Van Hoozer, of Jefferson County, died about August, 1850, aged 122 years. David Kenison, a soldier of the Revolution, died near Albany, New York, on the 24th February, 1852, aged 117; and William Pridgeon, of Bladen County, North Carolina, died a year or two previously, aged 122 years. The Negro and Slave races, in various parts of the world, have presented some remarkable cases of longevity, and America has some similar instances. In October, 1854, Judy, a slave on the Plantation of H. B. Richardson, in Bladon County, died, aged 110 years. She was one of eight slaves who, nearly 60 years ago, were the first settlers on the Plantation where she died. Of the seven others, one died over 90 years of age ; another, 93 ; and a third, 81 ; two are living—one 75, and the other *one 60 years* of age."

Notwithstanding what has been already stated, it would seem that of the two, extreme cold is more favourable to long life than extreme heat. Sir Henry Halford was informed by the Russian Ambassador, Baron Brunow, that there was a level country of about 100 leagues square, sloping to the South on the boarders of Siberia, where a year rarely passed in the course of which some person did not die of the age of 130. The question asked, of course, was "Can you depend upon your registers there?" To which the reply was, "Any body who knows the practices of the Greek Church will tell you that the bishops are more careful of their registration there, if possible, than your parochial clergy are in Great Britain." In the year 1835 there died, in the Russian Empire, 416 persons of 100 years of age and upwards; the oldest was 135 years, and there were 111 above 110 years old. And from the official account of deaths in the same Empire, in 1839, it appeared that there were 858 whose ages ranged from 100 to 105 years; 126 from 110 to 115; 130 from 115 to 120; 3 from 120 to 130; one at 145 years; three from 150 to 156; one at 160; and one at 166. At Dantzic, a man is said to have died aged 184, and another was living at Wallachia, in 1840, aged 186.

On entering upon a similar inquiry with the present, Hufeland began with Emperors, Kings, and the great ones of the earth, asking himself this question, "Has nature, which has conferred upon them, in the highest degree, all the advantages and enjoyments of this world, bestowed upon them also her best gift—a longer duration of life?" He answers, "Unfortunately, not; neither ancient nor modern history informs us that this prerogative belongs exclusively to them. In ancient history we find only a few Kings who attained to their eightieth year; and this is equally the case in the modern. In the whole catalogue of Roman and German Emperors, reckoning from Augustus to the present time, which includes altogether above 200, we find (the two first, Augustus and Tiberius, excepted) only *four* who arrived at the age of 80, viz., Gordian, Valerian, Anastasius, and Justinian." He goes on to speak of Augustus, who was a temperate man—used none but the simplest food, ate only when he had an appetite, never drank above a pint of wine, and considered mirth and good company as the best seasoning of his meals; and he lived to 76. We have already presented the list of English sovereigns, and the causes of their deaths, in a previous section of this division.

Ecclesiastical princes, he observes, have not, in this respect, been more fortunate. "Of 300 Popes, who may be reckoned up, no more than five attained to, or exceeded, the age of *eighty*, though they possessed the advantage of obtaining the pontifical chair at a late perio,d aud had, therefore a greater probability of enjoying longevity." By way of contrast, he remarks that an extraordinary number of instances may be found among the hermits and monks, who, with the strictest regimen, self-denial, and abstraction, while they divested themselves of all human passions, and avoided such intercourse as might tend to excite them, led a life of contemplation, but united with dobily exercise, and the enjoyment of free air. Thus, the

Apostle John attained to the age of 93; Paul, the hermit, by means of an almost incredibly severe regimen in a grotto, to that of 113; and St. Anthony to that of 105. Athanasius and Jerome also exceeded the age of 80.

Deep-thinking philosophers, he goes on to say, "have at all times been distinguished by their great age, especially when their philosophy was occupied in the study of nature, and afforded them the divine pleasure of discovering new and important truths: the purest enjoyment, a beneficial exaltation of ourselves, and a kind of restoration which may be ranked among the principal means of prolonging the life of a perfect being." Dr. Erasmus Wilson, the editor of the *Edition of Hufeland*, from which we quote, gives the following list in illustration of the text:—

Tasso	51	Galileo	78
Virgil	52	Swift	78
Shakespeare	52	Roger Bacon	78
Moliere	53	Corneille	78
Dante	56	Marmontel	79
Pope	56	Thucydides	80
Ovid	57	Juvenal	80
Horace	57	Young	80
Racine	59	Kant	80
Demosthenes	59	Plato	81
Lavater	60	Buffon	81
Galvani	61	Goethe	82
Bocaccio	62	Claude	82
Fenelon	63	West	82
Aristotle	63	Franklin	84
Cuvier	64	Metastasio	84
Milton	66	Herschell	84
Rousseau	66	Anacreon	85
Erasmus	69	Newton	85
Cervantes	69	Voltaire	85
Beaumarchais	69	Halley	86
Dryden	70	Sophocles	90
Petrarch	70	Leuwenhoeck	91
Le Sage	70	Hans Sloane	93
Linnæus	71	Whiston	95
Locke	73	Michael Angelo	96
La Fontaine	74	Titian	96
Handel	75	Horodias	100
Reaumur	75	Fontenelle	100
Euler	77	Georgias	107

This list, it will be seen, includes the names of a good many of our greatest poets and painters. They are proverbially long-lived; and other instances may be adduced, of more recent date. Amongst the poets, Cowper reached 69; Scott 61; Wordsworth 80; Rogers 82; James Montgomery over 80, and Goethe 82. Byron, Burns, and Collins, indeed, died young, being respectively 37, 37, and 38. Poor Keats was only 24. But with these drawbacks an average of something like 60 is attained. Music is a sister art to Poetry, and musicians are remarkable for length of days. Mozart, indeed, died at 36, but Haydn reached 78.

The painters are mostly included in the list, but we may add Sir Thomas Lawrence, who died at 61, Sir J. Reynolds at 69, and Rembrandt at 82; but Raphael, again, died at 37. Sculpture is a sister art to painting, as music to poetry, and here we have Canova at 65, and Flaxman at 71. We take these cases as they occur to us. The reader can supply others.

In *Gould's Dictionary of Artists*, published in 1839, the names, with the ages, of 1,122 persons are given; which furnish the following facts as to longevity of this class:—Died under 60 years old, 474 (about two-fifths); 60 years and under 70, 250 (over one-fifth); 70 years and under 80, 243 (again over one-fifth); 80 years and under 90, 135 (above 1 in 9); 90 years and under 100, 19; above 100, 1. The average age at death of the whole number being 55 years, from which (adds Mr. Bailey,) "It would appear that the pursuit of the fine arts has a tranquillizing effect upon the spirits, and a tendency to moral refinement in the habits and manners of its professors, extremely favourable to the prolongation of life."

Thus my Lord Bacon *(Hist. of Life and Death)* says "Admiration and light contemplation are very powerful to the prolonging of life; for they hold the spirit in such things as delight them, and suffer them not to tumultate or carry them unquietly or waywardly; and therefore all the contemplation of natural things, which had so many and so eminent objects to admire (as Democritus, Plato, Permenides, Apollonius) were long lived; also rhetoricians, which tasted but lightly of things, and studied rather exornation of speech than for profundity of matter, were long lives (as Georgias, Protagoras, Isocrates, Seneca), and certainly, as old men are, for the most part talkative, so talkative men do often grow old; for it shews a light contemplation, and such as does not strain the spirits or vex them: but subtle, and acute, and eager inquisition shorten life, for it trieth the spirit and wasteth it."

It is a little strange, though by no means unaccountable, that *physicians* who practice, are shorter lived than almost any other of the professional classes. The following solution has been offered by one of themselves:—"They have the best opportunity of observing these prudential rules and precautions for preserving health, which they lay down for others; and there are few employments in which the powers both of the body and mind are exposed to so much consumption as in this. Head and feet must be always exercised in common. But the greatest mortality prevails during the first ten years of their practice." After that time they become inured to the fatigue, and almost impervious to noxious effluvia, infectious disorders, or even the heart-melting scenes of woe into which their professional duties call them. Still there are some who have attained to a great age: amongst them the following may be mentioned:—

Boehhaave	70	Harvey	81
Haller	70	Mead	81
Tissot	70	Duhamel	82
Gall	71	Astruc	83
Darwin	72	Hoffman	83
Van Swirton	72	Pinel	84
Fallopius	72	Swedenborg	85
Jenner	75	Morgagni	89
Heister	75	Heberden	92
Cullen	78	Reysch	93
Galen	79	Hippocrates	109
Spallanzani	79		

M. Lombard has carried this class of observations still further into detail, and has given as the result the following as the duration of *each of the classes* he names:—

Magistrates	69 years.	Butchers	53 years.
Clergymen	63 „	Sawyers	51 „
Merchants	62 „	Joiners and Carpenters	49 „
Gardeners	60 „	Painters, ordinary	44 „
Masons and Bricklayers	55 „	Millers and Bakers	42 „
Surgeons	54 „	Stone Cutters[*]	34 „

Annuitants, as a class, are not included in this Table. *Their* extraordinary tendency to long life has become proverbial. The cause is almost as patent as the fact, viz., the absence of any care or anxiety about worldly affairs. Strange to say, however, the observations taken upon Government annuitants shewed the "expectation" on male lives, below 30, to be *less* than that of the general population. The irregularities of youth was the cause assigned. We may here remark, that the influence of the mind upon the duration of life is even more marked than the occupation of the body. Where the mind is devoted to one object, there is also a better chance of long life than if the mental energies be exhausted by grasping two or three.

Dr. Guy, whose name has already been introduced in these pages, has paid long and marked attention to the duration of life amongst the professional classes in this kingdom. Some years since, he published some statistics, showing the average age at which each of the following classes died, after having reached the age of 51 :—

	Years.		Years.
Clergy	74	Medical men	73
Lawyers	72¾	Learned professions collectively	76½

The clergy, therefore, of the three, are the most healthy ; the lawyers the least so.

He has subsequently taken observations on the most eminent of these professions only, with the following results :—

	Years.
Clergy (archbishops and bishops)	70¼
Lawyers (judges, &c.)	67
Medical men (baronets, &c.)	74½

The medical profession here has the advantage. In a paper, recently published in the *Statistical Journal*, he reviews these observations, and furnishes additional ones; and summing up with the following conclusions. 1. That the duration of life among lawyers is somewhat shorter than that of the members of the two other learned professions. 2. That the duration of the life of lawyers has suffered a slight progressive decrease during the last three centuries. And, generally, he lays down (1) that the members of the three learned professions occupy, in respect of the duration of their lives, a favourable position among the educated classes. (2). That the difference in the duration of life of the three learned professions is not considerable. (3). That the three learned professions occupy the following relative position in respect to the duration of their lives, the longest lived being placed first: *medical men*, *clergymen*, *lawyers*.[†]

Sir Humphrey Davy differed in his views from several of the writers already quoted, and his remarks have a great show of truth about them. The English, as a nation, are pre-eminently active, and the natives of no other country follow their objects with so much force, fire, and constancy. And as human powers are limited, there are few examples of very distinguished men living in this country to old age; they usually fail, droop and die before they have attained the period naturally marked for the end of human existence. The lives of our statesmen, warriors, poets, and even philosophers, offer abundant proofs of the truth of this opinion; whatever burns, consumes,—ashes remain. Before the period of youth is passed, grey hairs usually cover those brows which are adorned with the civic oak or the laurel; and in the luxurious and exciting life of the man of pleasure, their tints are not even preserved by the myrtle wreath or the garland of roses from the premature winter of time." *

[†] Vol. 20, p. 17.

[*] *For additional information on stonemasons'* lives, see Society of Arts Journal, *vol. viii., p. 773.—Note 1866.*

At the Census of 1851 there were returned in London 3,072 persons classed as "independent gentlemen," and 4,719 defined as "annuitants." The reader will not suppose that the number of independent gentlemen is actually limited to the number just given (or, perhaps, the annuitants either)—the figures refer to the number who returned themselves as such. Now, in the year last past, 1856, there died of these numbers respectively—"independent gentlemen," 546; "annuitants," only 34! The *Times*, quoting these figures in a leader, remarked, in reference to them, "It has always been usual to regard *annuitants* as endowed with peculiar tenacity of life, and in the occasional bitterness of irony, they have been described as the realundying ones of the human race. We confess, however, that we never accepted the impression so completely in the light of a fact as it is placed by the Tables before us!"

We have also just spoken of the length of days enjoyed by the members of the "Society of Friends." A valued acquaintance of that class has handed us a Table confirmatory of that fact, based upon the the deaths of 1853, which we here give. We believe a Table of the kind is prepared every year:—

TABLE
Shewing the Deaths, at different Ages, in the Society of Friends in Great Britain and Ireland, during the years 1850-51, 1851-52, and 1852-53.

Age.	Year 1850-51.			Year 1851-2.			Year 1852-53.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Under 1 year†	17	11	28	10	5	15	13	8	21
Under 5 years	25	16	41	18	12	30	18	13	31
From 5 to 10	3	7	10	5	7	12	4	2	6
„ 10 „ 15	1	1	2	4	7	11	5	6	11
„ 5 „ 20	9	4	13	7	4	11	5	3	8
„ 20 „ 30	12	10	22	13	23	33	7	10	17
„ 30 „ 40	10	12	22	4	19	23	8	8	16
„ 40 „ 50	9	10	19	9	13	22	7	14	21
„ 50 „ 60	19	21	40	10	22	32	16	14	30
„ 60 „ 70	23	24	47	28	29	57	26	34	60
„ 70 „ 80	31	44	75	25	46	71	20	46	66
„ 80 „ 90	16	15	31	16	41	57	13	24	37
„ 90 „ 100	2	3	5	1	2	3	2	6	8
	160	167	327	187	225	362	131	180	311

† The numbers in this series are included in the next, "under 5 years."
Average age in 1850-51—50 years. 8 months, 7 days, and 9-10ths.
„ „ 1851-52—52 „ 11 „ 1½ „
„ „ 1852-53 - 53 „ 1 „ 8 „

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* The last days of a Philosopher.

But the most extraordinary instances of longevity must be searched for amongst classes, for the most part, other than those we have named—such as those who are frequently subjected to great bodily labour, and mostly in the open air—those who lead a simple life, most in accordance with nature, as *farmers*, *gardeners*, *agricultural labourers*, *huntsmen*, and occasionally *soldiers* and *sailors*. "In these situations," says Hufeland, "man still attains to 140 or even 150 years." He refers, in detail, to Henry Jenkins, of Yorkshire, who died in 1670, aged 169, his occupation having been chiefly that of fishing; to Thomas Parr, of Shropshire—rendered famous by association (in name only) with "Parr's Life Pills"—he was 152 years 9 months old when he died, and had lived under nine Kings of England! His occupation was that of a farm servant, and he had to maintain himself by daily labour. A grandson of this same "Parr" died at Cork some years since, aged 103. Also to Effingham, who died in Cornwall in 1757, aged 144. He was a labourer, but had in his younger days been a soldier. These and many other similar cases are included in a Table at the end of this chapter.

We will here remark that it is not so much our object to present the reader with cases of extreme longevity (although we have kept a careful record of them) as *to investigate the causes and circumstances which have led to them.* Climate, occupation, parentage, the mode of living, all have more or less influence, and should teach us well to weigh all the facts before coming to any conclusion. Some amount of previous study and attention also is necessary to a full understanding of the physical bearings of the subject; and some historical knowledge will also be advantageous. For instance, it should be known that the mode of computing time is believed not to have been the same formerly as now. Theologists, who have carefully investigated ancient history, are of opinion that the chronology of the early ages was not the same as that used at present.

> "Some, particularly Hensler, have proved with the highest probability, that the year, till the time of Abraham, consisted only of *three months;* that it was afterwards extended to eight; and that it was not till the time of Joseph that it was made to consist of twelve. The assertions," continues Hufeland, "are, in a certain degree, confirmed by some of the Eastern nations, who still reckon only three months to the year; and besides it would be altogether inexplicable why the life of man should have been shortened one-half immediately after the flood. It would be equally inexplicable why the patriarchs did not marry till their sixtieth, seventieth, and even hundreth year; but this difficulty vanishes when we reckon these ages according to the before-mentioned standard, which will give the twentieth or thirtieth year, and consequently the same periods at which people marry at present. The whole, therefore, according to this explanation, assumes a different appearance. The sixteen hundred years before the flood will become 414; and the nine hundred years (the highest recorded) which *Methuselah* lived will be reduced to two hundred—an age which is not impossible, and to which some men in modern times have very nearly approached." Again, with the period of Abraham, "we find mention of a duration of life which can be still attained, and which no longer appears extraordinary, especially when we consider the temperate manner in which the patriarchs lived; and that as they were nomades or a wandering people, they were much exposed to the free open air."

We, therefore, think Hufeland has arrived at a correct conclusion, when he says that *man can still attain to the same age as ever;* that the duration in the time of Moses, the Greeks, and the Romans, was the same as at present—the only difference being that the more careful mode of living followed by the ancients, caused a greater proportion to attain old age than amongst us.

The Egyptians, or the Greeks, discovered that there was an average interval of a *hundred* years between the births of children and the births of their great-grandfathers; or that the interval in an ascending genealogical Table, from the birth of the son to the birth of the father, was 33⅓ years. This time, called a *generation*, has been found to agree with modern observation, "but" says Sir Isaac Newton, who adopts the computation, "if the reckoning of generations proceeded by the eldest sons, they are shorter; so that three of them may be reckoned at about 75 or 80 years; and the reigns of kings are still shorter, because kings are succeeded, not only by their eldest sons, but sometimes by their brothers; and sometimes they are slain or deposed, and succeeded by others of an equal or greater age, especially in elective or turbulent kingdoms."

But we arrive at a point at which it appears desirable to take a more physiological view of the question. ***M. Flourens***, in his famous book—***De la Longevité Humaine et de la Quantité de Vie sur le Globe***, Paris, 1855—a book which has aroused the attention of nearly all the scientific men in Europe, gives the following as the natural divisions, and natural durations, of the life of man:—"The first ten years of life are infancy, properly so called; the second ten is the period of boyhood; from twenty to thirty is the first youth; from thirty to forty the second. The first manhood is from forty to forty-five; the second from fifty-five to seventy. This period of manhood is the age of strength—the manly period of human life. From seventy to eighty-five is the first period of old age; and at eighty-five the second old age begins." A ***hundred years*** being, in his opinion, the natural period of existence. An able English reviewer of this book says, (vide ***Blackwood's Magazine;*** May, 1855):—

> "The limits thus assigned by Flourens to the several periods of life are not wholly arbitrary, like those we generally talk of; on the contrary, a little more or less sound physiological reason is assigned for each. Infancy proper ceases at ten, because then the second toothing is completed; boyhood at twenty, because then the bones cease to increase in length; and youth extends to forty, because about that time the body ceases to increase in size. Enlargement of bulk after that period consists chiefly in the accumulation of fat. The real development of the parts of the body has already ceased. Instead of increasing the strength and activity, this latter growth weakens the body, and retards its motions. Then when growth has ceased, the body rests, rallies, and becomes invigorated. Like a fortress with all its works complete, its garrison in full numbers, and threatened with an early siege, it repairs, arranges, disposes everything within itself. The new stores it daily receives are employed in fully equipping, in strengthening, in rebuilding, and in maintaining every part in the greatest perfection and efficiency. This period of internal invigoration lasts fifteen years (that of the first manhood) and it maintains itself for ten or fifteen years more, when old age begins."

The illustration is good.

Buffon, whose whole life was devoted to this and kindred subjects, says—"The man who does not die of accidental diseases lives everywhere to ninety or a hundred years." He bases his conclusions on physiological data. "The total duration of life may be estimated to a certain degree by that of the duration of an animal's growth. . . . . Man increases in height up to his sixteenth or eighteenth year, and yet the full development in size of all the parts of his body is not completed till the thirtieth year. The dog attains his full length in one year, and only in the second year completes its growth in bulk or size. *Man who takes thirty years to grow, lives ninety or a hundred years.* The dog which grows only two or three years, lives only ten or twelve; and it is the same with most other animals." He afterwards follows out the idea more fully. "The duration of life in the horse, as in all other species of animals, is proportionate to the length of time during which it grows. Man who takes fourteen years to grow, may live six or seven times as long; that is to ninety or a hundred years. The horse which completes its growth in four years may live six or seven times as long, that is to twenty or thirty years. . . . The stag is five or six years growing: it lives also seven times five or six, that is thirty-five or forty years."

Flourens, taking up this ingenious idea of Buffon's, and having the advantage of more correct physiological knowledge than existed in the days of the latter (who, however, did much to prepare the way for this increased knowledge), gives us the following corrected Table:—

	Years.		Years		Years.		Years
Man grows for	20	and lives	90 or 100	The Dog grows for	2	and lives	10 or 12
The Camel	8		40	The Cat	1½		9 or 10
The Horse	5		25	The Hare	1		8
The Ox	4		15 to 20	The Guinea-pig	7 months		6 or 7
The Lion	4		20				

His theory of the completion of animal growth being grounded on the *union of the bones to their epiphyses.* "So long as this union does not take place the animal grows. As soon as the bones are united to their epiphyses the animal ceases to grow." And his multiple for the duration of life is FIVE times the period of growth with all the larger animals, instead of *six* or *seven times*, as with Buffon. But it is worth while to quote his exact words:—

> "It is about fifteen years since I entered upon a course of researches into the physiological law of the duration of life. both in man and in some of the domestic animals. The most striking result of this labour, as will soon be shown is that the normal duration of the life of man is one century. *A hundred years of life is what Providence intended for man;* it is true few men reach this great term. but yet how few do what is necessary to attain it. With our customs, our passions, our miseries, man does not die —he kills himself."

The regular and determinate duration of life, according to M. Flourens, depends on the periods of gestation and growth, each animal living about five times as long as the term of its growth.

> "Man being twenty years growing. lives five times twenty. that is to say, one hundred years. The camel is eight years growing and lives five times eight, or forty years. The horse is five years growing and he lives five times five, that is to say, twenty-five years; and so with the rest. We have then finally a precise characteristic which gives us accurately the duration of growth; the duration of growth gives us the duration of life. All the phenomena of life are united by the following chain of relations – the duration of life is given by the duration of growth; the duration of growth by the duration of gestation; the duration of gestation by the height, &c. &c. The larger the animal, the longer is the time of gestation. The gestation of the rabbit is thirty days; that of man is nine months; that of the elephant is nearly two years, &c."

Haller, who also devoted much time to the investigation of this subject, adopted a different basis for his conclusions, although he was fully capable, as a professed physiologist, of applying it to the principles of that science. "He collected together all the authenticated instances of long life. . . . . His conclusion—not a very precise one—is that *the utmost limit of human life is not within two hundred years!*"

Pythagoras, the Phœnician, used to divide the life of man into four equal parts. From the first to the twentieth year he called him a child, a man begun; from the twentieth to the fortieth, a young man; from the fortieth to the sixtieth, a man; from the sixtieth to the eightieth, an old or declining man; and *after this period he reckoned him no more among the living, let him live to whatever age he might.*[*]

Hufeland lays it down as a rule, that the animal lives *eight times* as long as it grows. Now man, in a natural state, where the period of maturity is not hastened by art, requires full 25 years to attain his complete growth and conformation; "and this proportion also will give him an absolute age of 200 years." He states that *nearly all those deaths which take place before the hundredth year are brought on artificially*—"that is to say, by disease or accident; and it is certain that the far greater part of men die an unnatural death, and that not above one in a thousand attains to the age of 100 years"—a fact we are fully cognizant of. With regard to the relative duration of human life, *that*, he says, is extremely variable, and as different as each individual. "It is regulated *according to the goodness or badness of the mass of which* the person is formed; his manner of living; speedier or slower consumption; and a thousand internal and external circumstances which may have an influence on the continuance of his existence. We must not," he continues "imagine that every man, *at present*, brings with him into the world a vital stock capable of lasting 150 or 200 years." Still he has elsewhere asserted, that the organization and vital power of man are able to support "a duration and activity of 200 years."

Coming to more recent authorites, Dr. Farr, in the 16th Annual Report of the Registrar-General, says—"the *natural term of human life appears to be a hundred years;* and out of the annual generations successively born in England and Wales, a few solitary individuals attain that limiting age, the rest dropping off year by year as age advances, so that the mean lifetime is *at present* only 41 years." If we remember rightly, Dr. Cumming, in his sermons, has expressed his belief that 130 years is the last limitation assigned to human life by the Divine decree; and a recent writer in the *Statist*, contemplating the usual decline of man at sixty, thus exclaims: "Shall we startle our readers, by affirming that it is perfectly possible to bestow once more upon mankind a patriarchal length of days? We speak only of the Abrahamic epoch, when every man sat under his own vine and fig-tree. Yet so it is; but to accomplish it, we must do as they did; avoid great cities; shun strong drinks; eat sparingly; rise early, and live actively. Within the last two centuries many well-authenticated cases in England and Wales are recorded of persons who lived to ages varying from 150 to 200 years! a length of days commonly believed to belong exclusively to the patriarchal era."

The Census of 1851 furnished some corroborative testimony. There were in Great Britain at that period more than half a million (596,030) who had passed the barrier of "three-score years and ten;" more than 129,000 had passed the psalmist's limit of "four-score years;" and 100,000 the years which the last of Plato's climacteric square numbers expressed (9 times 9 = 81); nearly ten thousand (9,847) had lived 90 years or more; a band of 2,038 aged pilgrims had been wandering 95 years and more on the unended journey; and 319—111 men and 208 women—said they had witnessed more than a hundred evolutions of the seasons, some of them reaching 119. These, and other similar considerations, no doubt led Dr. Farr to the conclusion that a *century* may be considered "*the circuit of time in which human life goes through all the phases of its evolutions.*"

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[*] Hufeland.

That few men really reach their hundreth year, therefore, experience repeats, is no proof that such is not the natural term of human life. Without any desire for special pleading, we believe this to be a correct view of the case. The more primitive or pastoral life of the Israelites subjected them less to the evil influences we have noted: hence, perhaps, the frequent instances of longevity recorded in Scripture history. Abraham, for instance, lived to the age of 175. His son Isaac, to 180; Jacob, to 147; Ishmael, a warrior, to 137; Joseph, to 110. Joshua, also, reached 110; Elisha, 100; and Sarah, the only female of the ancient world with whose duration of life we are acquainted, lived 127 years.* These ages more nearly correspond, *not* with what David or Solomon said, but with what the *Lord* said (*vide* 6th chap. Genesis, 3rd verse), "And the LORD said, my spirit shall not always strive with man, for that he also is flesh: *yet, his days shall be an hundred and twenty years.*"

These considerations lead us on to inquire, Is the *extent of life* determined, or not? If not, is it in the power of human means to *prolong* it?

> "The first question," says Hufeland, "has oft given rise to disputes in which divines and philosophers have been divided, and which have several times brought the medical art into great difficulties. On the above principles, however it may be easily resolved. Each race of beings as well as each individual. has its term of life as certainly fixed as it has its defined size and its proper quantity of vital power strength of organs and means of consumption or regeneration; for the duration of life is a consequence of that consumption. and can continne no longer than power and organs are able to support it. But this consumption may be hastened or retarded: favourable or unfavourable, destructive or beneficial. circumstances may have an influence upon it; *and it thence follows that, notwithstanding the before-mentioned natural determination, the limits of it may be altered.*"

In answer to the second question, he says it is undoubtedly possible to prolong life—

> "But not by magical cures or gold tinctures; nor can we hope to increase the quantity and efficacy of the vital power which has been dispensed to us or to alter the whole determination of nature. Whatever is done must be effected by proper attention to the above four points on which the duration of life properly depends; by retarding consumption, and by promoting or facilitating renovation or regeneration. The more food, clothing manner of living, climate and even artificial means are favourable to these requisites, the more influence they will have in the prolongation of life; the more they counteract these, the more they will shorten the duration of existence."

It was, we believe, Buffon who started a fanciful theory that *the*

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* Hufeland.

total quantity of life on the globe is always the same; and that *death, which seems to destroy all, destroys nothing of that primitive life which is common to all the species of organised beings.* This is on a par with some of the strange speculations of Hume and Lord Monboddo, regarding the origin of the human race, and no modern writer has entertained the theory, unless it be Leibnitz. But while it has found no supporters, it has met with an able opponent in M. Flourens:—

> "I reject" he says, "the organic molecules of Buffon as I do the monads of Leibnitz. They are only philosophic expedients for removing difficulties which they do not remove. I study life in neither of these but in living beings themselves; and from this study I learn two things—*first*, that the number of species has been continually diminishing ever since animals have existed upon the globe; and, *second* that the number of individuals in certain species has been, on the contrary continually increasing. The result of these contrary actions is that, taking everything into account, the total quantity of life—by which I understand the total number of living beings—remains, in effect as Buffon has said very nearly the same."

But we do not intend dwelling on this part of the subject. The point we wish more particularly to enforce is, that whatever the allotted duration of human life may be, speaking physiologically, *we do not, in this country* (any more than in most other parts of the world), *on an average, enjoy the full period of existence assigned to us.* And of this fact we can furnish abundant and unmistakable proof. A recent writer in the *Times** has well expressed himself hereon. He says:—

> "To those perhaps, who reflect that, after all, the years of man are still, as in the days of the Psalmist, but three score and ten it may seem that the pretensions of sanitary science to prolong life rest on a very slender foundation. But the truth is, that our efforts are required *not to surpass this standard but to attain it. It is only by vigilance and energy in the work of self-preservation that the appointed average can be reached;* and it is when we read in such calculations as we have now been considering (the Registrar-General's Report) the number of years and lives which are lopped off *by preventible disorder*, that we feel in its fullest force, the duty imposed upon us of employing, to the utmost, the remedial means within our reach."

Now, if it be necessary to give any illustration of how *few* persons really die from what may be termed natural causes—namely, old age, or the natural wear and tear of the system—beyond those which are every day occurring within the observation of each of our readers, these reports of the Registrar-General afford us abundant materials, and in an understandable form. According to the 16th annual report recently published, the total deaths in this kingdom, in 1853, were 421,097, and of this number, in all but 6,899 cases, the causes are specified *Consumption*, (which, as we have elsewhere stated, is more fatal than any other single disease in this country) claimed its 54,918 victims. "The deaths from this cause were 46,614 in 1850, and have since that year increased progressively *without any very evident reason. Pneumonia* claimed its 24,098; *bronchitis*, 22,391; *typhus*, 18,013; *scarlatina*, 15,699; and *diarrhœa*, 14,192. *Dropsy* claimed 10,302; *apoplexy*, 8,496; *paralysis*, 8,378. The hooping-cough took off 11,200, which was considerably above the average; 24,796 died of *convulsions*—these would be chiefly children; and no less than 18,968 died from premature birth and debility. *Disease of the heart* was fatal in 12,864 cases. *Asthma* took off 5,143; and *cancer* 5,663.

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* 28th January, 1857.

Small-pox took off 3151; the *measles* 4,895; and the *croup* 3,660. Teething proved fatal to 4,678 children; and 2,268 mothers died of childbirth. *One mother died to every 200 children born alive.* Disease of the brain terminated fatally in 3,444 cases, and disease of the liver in 4,139 other instances. Malformations and premature births were more fatal to males than females; and out of the 29,141 who alone are reported as having died of *old age*—being about 7 per cent. of the entire number of deaths in the year, and only about half the number which died from consumption—there were 16,543 women against 12,598 men. During the year, 252 persons died of carbuncle and boil; and 116 from *lock-jaw (tetanus).* Of every 100 deaths, 38 proceed from what are called *local* diseases; 12 from diseases of the nervous system; and 13 from diseases of the respiratory organs; or if consumption be added, 26. Such statistics are unmistakeable.

But we have, as an additional argument, and as a circumstance of great encouragement, the fact that the mortality of this kingdom is gradually becoming less, or in other words, that the average duration of life is becoming extended. Even within the past century the change for the better has been so rapid and astounding as at first sight to appear almost incredible. But we derive our data from one of the greatest authorities this country, or the world, ever produced. The late Mr. Griffith Davies says:—

"By laborious investigations I have ascertained, upon indubitable evidence, that a gradual diminution has taken place in the mortality among the inhabitants of this country throughout the last 100 years; and that taking all ages together, *out of the same population*, while from

1720	to 1730	there died annually only	106
1730	„ 1740	„ „ ...	104
1740	„ 1750	„ „ ...	92
1750	„ 1760	„ „ ...	85
1760	„ 1770	„ „ ...	84
1770	„ 1780	„ „ ...	86
1780	„ 1790	there died annually only	79
1790	„ 1800	„ „ ...	75
1800	„ 1805	„ „ ...	70
1805	„ 1810	„ „ ...	66
1810	„ 1815	„ „ ...	61
1815	„ 1820	„ „ ...	62

So that the mortality decreased *two-fifths* between 1720 and 1820, and has still further decreased since that period. How much more will it do so now that almost every town in the kingdom has its Board for the due enforcement of sanitary regulations; when proper cemeteries are being provided for the burial of the dead; and when dwellings for all classes are being erected with due regard to healthiness of situation, and a proper supply of pure air and water, so essential to the preservation of human life! We have good right to assume that the full measure of human existence is only attained under a combination of all the circumstances known to be favourable to perfect health. Therefore, we may fairly take the mortality of the healthiest districts in the kingdom for the basis of what the general mortality would be under equally favourable circumstances—making a proportionate allowance for the influence of occupation upon health, and, therefore, upon the mortality. This part of the subject will be more fully treated in our chapter on "Vital Statistics;" in the meantime, we here present a few facts bearing upon it.

The average mortality of England and Wales is, as we have seen, 22 in 1000 annually, but there are some favoured districts where it falls much below this. For instance, during the ten years 1841-50, it was found that the average annual mortality in ***Rothbury*** and ***Glendale***, in Northumberland, and ***Eastbourne***, in Sussex, was only 15 per 1000, or 7 below the average of the kingdom. In 14 other districts, viz. Holsworthy and Okehampton (Devon), Battle, Cuckfield, and Steyning (Sussex), Reigate and Hambledon (Surrey), Haltwhistle (Northumberland), Easthampstad (Berks.), Guisborough (Yorks.), Bootle (Cumberland), Christchurch (Hants.), Garstang (Lancashire), and Builth (Brecknockshire), the mortality during the same period was only 16 per 1000. While in 47 other districts, including Hendon which comprises Harrow, Belford (Northumberland), Southwell, (Notts.), and Dorking (Surrey), it was at the rate of 17 per 1000. The Registrar-General remarks hereon—"Upon going over these districts it will be found that the health and the circumstances of the population by *no means approach any ideal standard of perfection.* Nature, however, does much for the inhabitants. The fresh air dilutes the emanations from their nuisances; and infectious diseases are not easily transmitted from person to person in detached houses. Still the health of the people in those districts admits of improvement; *and it may be assumed with certainty that the mortality of the English people in very variable, but generally under favorable conditions, does not exceed* 17 *in* 1000."

The Census Commissioners speak seriously, yet eloquently, on the evils of untimely death. What, they ask, so bitter as the premature death of a wife—a child—a father? What dashes to the earth so many hopes, breaks so many sweet alliances, blasts so many auspicious enterprises, as unnatural death? The poets, faithful interpreters of our aspirations, have always sung that in the happier ages of the world this source of tears shall be dried up. Science, (they continue,) can scarely apprehend all the results, and all the modifications of society that would flow from the extension of life to its natural limits, nor perceive how all the violence, impurity, ignorance, and innumerable diseases which now destroy men can be dispersed. But, they say, science offers no justification to despair. When the great changes that have been already wrought in plants and animals of all kinds are considered—and the infinite capacity of man, the extent to which his nature is modifiable, *the probability that healthier parents will give birth to healthier offspring* from generation to generation, the mind is involuntarily disposed to listen with awakened expectations to the voice of the great prophet—"And the voice of weeping shall be no more heard, nor the voice of crying. There shall be no more thence an infant of days, nor an old man that hath not *filled his days:* for the child shall die a *hundred years old;* but the sinner being a hundred years old shall be accursed." This term being clearly referred to as that of the complete duration of human life.

Let us then, here, pause and reflect. If we cannot individually control the sanitary influences with which we may be surrounded, we can, or ought to be, able to control our own appetites and desires, upon which so much depends. No sanitary laws can avail us much without this adjunct. If we were called upon for a solution ot the key to health and long life, so far as these are individually in our own keeping; our answer would be comprised in three words—*sobriety of living*. Let this at once be defined. "It consists," says Cornaro, "in moderate eating, in moderate drinking, and in moderate enjoyment of all the pleasures of life. In keeping the mind moderately, but constantly employed, in cultivating the affections moderately, in avoiding extremes of heat and cold, and in shunning excessive excitement either of body or mind." "By a sober life," says Lessius, in his *Art of enjoying perfect Health*, "I understand a moderate use of meat and drink, such as accords with the temperament and actual dispositions of the body, and with the functions of the mind. A sober life is a life of order, of rule, and of temperance." He then gives seven rules to be observed, in order to follow out such a mode of living. (1) Not to eat so much as will unfit the mind for its usual exertions; (2) or so much as will make the body heavy or torpid. (3) Not to pass hastily from one extreme of living to another, but to change slowly and cautiously. (4) To eat plain and wholesome food. (5) To avoid too great variety, and the use of curiously-made dishes. (6) To proportion the quantity of food to the temperament, the age, and the strength of the eater, and to the kind of food he uses. (7) Not to allow the appetite for food to regulate the quantity we take, as this sensual desire is really the cause of the whole difficulty.

Cornaro never tired of sounding the praises of sobriety of living; and Lessius, again and again, sang in the same strain. Our own immortal Shakspeare, too, with his characteristic clearness and brevity, enforces the same principle, when he makes Adam, the old servant of Oliver, thus exclaim:—

> "Though I look old yet I am strong and lusty,
> For in my youth I never did apply
> Hot and rebellious liquors to my blood;
> Nor did I with unbashful forehead woo
> The means of weakness and debility;
> *Therefore* my age is as the lusty winter,
> Frostly but kindly."

But let it never be forgotten that temperance in eating is quite as important, if not even more so, than temperance in drinking. Cornaro's warning to his countrymen, three centuries ago, is not unworthy of consideration even in the present day. "Oh! miserable and unhappy Italy, dost thou not see that gluttony is killing every year more people than would perish in a season of most severe pestilence, or by the fire and sword of many battles." For 60 years, Cornaro himself took only 12 ounces of food, everything included, and 13 ounces of drink daily, and he attained to the age of 100 years.

The quality of food is as necessary to be studied as the quantity. Hufeland points out that it is not those who lived on flesh, but on vegetable, pulse, fruit, and milk, who attained to the greatest age. He says, "Lord Bacon mentions a man of 120, who, during his whole life, never used any other food than milk. The Brahmins, by their religion, are confined merely to vegetables, and for the most part live to the age of 100. John Wesley, in the middle of his life, gave over the use of flesh, lived upon vegetables alone, and attained the age of 88!" Another rule he lays down on this subject is, that those *who* *wish to live long ought to eat slowly.* Good teeth, a good appetite, good digestion, and a good temperament, are also considered among the essential properties requisite for long life. Good temper, too, appears almost as requisite as a good temperament. A more modern, but experienced writer, says:—

> "Excessive labour, exposure to wet and cold, deprivation of sufficient quantities of necessary and wholesome food, habitual bad lodgings, sloth, and intemperance, are all deadly enemies to human life; but they are none of them so bad as violent and ungoverned passions. Men and women have survived all these, and at last reached an extreme old age; but it may be safely doubted whether a single instance can be found of a man of violent and irascible temper, habitually subject to storms of ungovernable passion, who has arrived at a very advanced period of life. It is, therefore, a matter of the highest importance to every one desirous to preserve 'a sound mind in a sound body,' so that the brittle vessel of life may glide down the stream of time smoothly and securely, instead of being continually tossed about amidst rocks and shoals which endanger its existence, to have a special care, amidst all the vicissitudes and trials of life, to maintain a quiet possession of his own spirit."—*Bailey's Records of Longevity.*

Sleep, a condition which takes place in every animal of a perfect kind, if properly regulated, is also, according to Hufeland, a promoter of longevity. Nothing, he says, is able to waste and destroy us so speedily as long-continued want of sleep; although, as he remarks, "old people sleep less because their intensive life, or vital consumption, is weaker and requires less restoration. Excessive sleep is to be avoided, as tending to produce corpulency, and the deposition of fat in the human body. Dr. Chambers, who had given much consideration to the causes and consequences of obesity, says, "The amount of fat required for the full and perfect resistance of the body, is different in different individuals, and will also vary according to their mode of life. Thus a man of letters will require less than a soldier; a soldier less than a prize-fighter." In opposition, however, to the opinion of an authority we shall presently have occasion to quote, he lays down that it is impossible to fix any absolute standard of weight for individuals, as an index of health, and that it is incorrect to look upon the average weight of healthy persons in proportion to their height. Still, although no absolute standard of weight can be adopted, the Doctor says:—

> "The development of fat, I consider, an element of great practical importance in calculations of the value of human life. It is of the more importance from the facility with which it may, in all but exceptional cases, be reckoned by the weight in proportion to the stature. In our species the bulk of the frame is pretty accurately shown by the height, and consequently the quantity of fat which ought to be attached to that frame may be calculated. Its deviations from the normal proportion may, therefore, easily be arrived at; and can hardly be denied to lead to very valuable conclusions. What can add more to that examination, which has resulted in the discovery of no disease, than to find that the weight is such as the healthiest usually possess? while if a person is much above or below the standard it is not necessary to discover any other bad symptom to pronounce the insurance of his life as above the ordinary risk. Were we confined to the observation of one single fact by which to appreciate the probability of future illness, I do not know any which would teach us more than this; and when we have means of learning other circumstances, there is none which opens the ground better for investigation."

The writer illustrates his meaning by the following example:—

> "If a proposal for assurance be sent from the country, backed merely with the opinion of a referee, whom we do not know, that 'no signs of disease are discernable,' and that the proposer has a robust appearance, our knowledge of the tendencies of his constitution is small indeed. But if to this it be added that he is five feet eight inches high, and weighs 11 stone, we feel a certain degree of safety in accepting him. But

should his weight be seventeen stone, a probable deposit of fat in the omentum and the heart occurs to us—disturbance of the abdominal circulation, apoplexy, &c., are suggested, and the liability to these balanced and inquired about; a corresponding deviation from the natural weight in the other direction would, in a similar manner, lead to a more detailed examination of the chest, and a calculation of the probable existence of tubercle. When we remember (he adds) that four-fifths of the losses at Insurance Offices arise from apoplexy and consumption (?) the safety which they would gain by the simple observation above-mentioned is obviously very important to those engaged in such enterprises."

The writer then quotes Dr. Hutchinson's Table, which gives the mean weight, at various heights, of 5,000 healthy men; the extremes of stature being excluded. He gives, as an example, that part of the Table which relates to men of from five to six feet in height;—and we do the same. It was based upon 2,650 observations, and may be taken as the standard of mean healthy weight:—

A person	5	feet	1	inch high	should weigh	8	stones	8	lbs.
,,	5	,,	2	inches	,,	9	,,	—	
,,	5	,,	3	,,	,,	9	,,	7	,,
,,	5	,,	4	,,	,,	9	,,	13	,,
,,	5	,,	5	,,	,,	10	,,	2	,,
,,	5	,,	6	,,	,,	10	,,	5	,,
,,	5	,,	7	,,	,,	10	,,	8	,,
,,	5	,,	8	,,	,,	11	,,	1	,,
,,	5	,,	9	,,	,,	11	,,	8	,,
,,	5	,,	10	,,	,,	12	,,	1	,,
,,	5	,,	11	,,	,,	12	,,	6	,,
,,	6	,,	0	,,	,,	12	,,	10	,,

"The individuals on whom these observations were made were men in the prime of vigorous life, capable of. and accustomed to use great muscular exertions. such as sailors, firemen, policemen, Grenadier Guards. watermen, cricketers, gentlemen, Oxford and Cambridge rowers, and the like; a certain quantum of paupers and artizans may be fairly set off by an equivalent allowance of draymen, wrestlers, and pugilists, who are inserted."

Having directed attention to requisites and essentials of health and long life, it would have been in keeping to note those things which are most to be guarded against as having a contrary tendency; and for this purpose we might have drawn largely on a writer (Hufeland), to whose valuable writings frequent reference has already been made. But space has closed in upon us; and we must be content with furnishing the reader with an epitome of the rules he lays down. The more a man follows nature, and is obedient to her laws, the longer he will live; the further he deviates from these the shorter will be his existence. *This is one of the most general laws.* Moderation in everything, the *aurea mediocritas*, so much extolled by Horace, and which Hume calls the best thing on earth, is indeed of the utmost efficacy in prolonging life. In a certain mediocrity of condition, climate, health, temperament, constitution, employment, spirits, diet, &c., lies the greatest secret for becoming old. By all extremes, either too much or too little, too high or too low, prolongation of life is impeded.

After carefully noting the foregoing requirements, Hufeland asks the reader to permit him to delineate *the portrait of a man destined to long life*—and who is not anxious to see and study the portrait?

"He has a proper and well-proportioned stature, without, however, being too tall. He is rather of the middle size, and somewhat thick-set. His complexion is not too florid: at any rate too much ruddiness in youth is seldom a sign of longevity. His hair approaches rather to the fair than the black; his skin is strong, but not rough.

His head is not too big; he has large veins at the extremities, and his shoulders are rather round than flat. His neck is not too long; his abdomen does not project; and his hands are large, but not too deeply cleft. His foot is rather thick than long; and his legs are firm and round. He has also a broad arched chest; a strong voice and the faculty of retaining his breath for a long time without difficulty. In general, there is a complete harmony in all his parts. His senses are good, but not too delicate; his pulse is slow and regular. *His stomach is excellent,* his appetite good, and his digestion easy. The joys of the table are to him of importance; they tune his mind to serenity, and his soul partakes in the pleasure which they communicate. He does not eat merely for the sake of eating; but each meal is an hour of daily festivity; a kind of delight, attended with this advantage, with regard to others, that it does not make him poorer, but richer. He *eats slowly,* and has not too much thirst. Too great thirst is always a sign of rapid self-consumption. In general, he is serene, loquacious, active, susceptible of joy, love, and hope; but insensible to the impressions of hatred, anger, and avarice His passions never become too violent or destructive. If he ever gives way to anger he experiences rather an useful glow of warmth. an artificial and gentle fever, without an overflowing of the bile. He is fond also of employment, particularly calm meditation and agreeable speculation, is an optunist, a friend to nature and domestic felicity, has no thirst after honours or riches; and banishes all thoughts of to-morrow."

With the exception of a little too much force of colour in the last touch or two, we think the portrait an exceedingly happy and good one.

LIST

Of persons who have reached the age of 120 or upwards, with places where they died, and date of death, compiled from various authentic sources.

207*Carn, Thomas, St. Leonard's, Shoreditch, 1588.
185 Tortin (or Zortan), Peter, Temeswar, Hungary, 1724.
180 A Mulatto man, at Frederick Town, Virginia, 1798.
180 M'Crain, Golour, Isle of Jura.
175 Truxo, Louisa, a negress, Tucuman, South America, 1780.
172 Room, John, Temeswar, Hungary, 1741.
169 Jenkins, Henry, Ellerton-upon-Swale, Yorkshire, 1670.
168 Edwards, William, Cochen, near Cardiff, South Wales, 1668.
168 A woman living at Moscow, in 1848.
167 Warren, Jonas, Balydole, Ireland, 1787.
166 Brookman, Sarah, Glastonbury.
162 Scott, Judith, Islington.
159 Surington, Jonas, Bergin, Norway, 1797.
152 Parr, Thomas, Winnington, Shropshire, 1635.
152 Bowles, James, Killingworth, Warwick, 1656.
151 Crawford, Mrs. Judith, Spanistown.
150 Carsish, Francis, Yorkshire.
150 Aponius, Marcus, Rimina.
150 Albuna, Marc, Ethiopia.
150 Fullonius, Titus, Bononia.
148 Desmond, Countess of, Ireland, 1612.
148 Brook, Mary, Leek.
148 Mead, Wm., M.D., Ware, Hertfordshire, 1652.
147 Devine, Bridget, (Irish), Manchester, 1845.
146 Winslow, Col., Tipperary, 1766.
146 Drakenberg, C. J., Norway.
146 Wignell, Anne, Jamaica.
145 Evan, Williams, Carmarthen.
144 Effingham, a Cornish man, died 1757.
143 Eccleston, Countess of, Ireland.
142 Paiba, A., Charlestown, Carolina, 1782.
142 A Coloured Man at Spanish Town, Jamaica, 1850.
141 Hough, Thos., Frodsham, Cheshire, 1591.
141 Sack, Simon, Trionia, 1764.
140 Leland, Wm., Lisurska, Ireland, 1731.
140 Sands, James, Staffordshire.
140 Lawrence, M., Shetland.
140 Raduly, Dumitur, Harernszeck, Transylvania, 1782.
140 Fury, Rebecca, a black woman, Falmouth, Jamaica, 1827.
140 Goldsmith, A., France.
140 Fuge, John, Savannah-le-Mere, Jamaica, 1827.
140 Gulstone, Wm., Ireland.
140 Anderson, Sarah, a free black.
139 Evans, Mr., Spitalfields, London, 1780.
139 Movett, M., surgeon, Dumfries, N. B.
139 Dobson, Mr., farmer, Hatfield, 1766.
139 A man at Dent, Yorkshire, 1777.
138 Hartop, Jonathan, Alboro', Boro'bridge, Yorkshire, 1791.
138 Chunn, Mrs., Orphirst, Lichfield, 1772.
138 Patten, Margaret, Lockwinnoch, Ayrshire.
138 Forrester, Jane, Abbey Luddercars, Cumberland, 1766.
138 Fabkowski, a Polish peasant, 1822.
138 Rousey, John, Island of Distrey, N. B., 1734.
138 Shapley, Wm., Knockall, Roscommon, Ireland, 1757.
137 Collier (male), Dublin.
137 Tertulla, L., Ariminum.
137 A Polish peasant, 1763.
137 Robertson, Mr., Edinburgh, 1793.

* This case is said to be confirmed by the register of the above parish—date of death 28th January, 1588. We have not searched the register; but we agree with Mr. Bailey, if it be "really entitled to credence, it is the most remarkable case of longevity we meet with in English history. It is the only case on the list we entertain any doubt of, and shall, on some early occasion endeavour to solve it. In the Russian *Petersburgh Gazette*, published in the early part of 1812, an instance is recorded of a man in the diocese of Ekaterinoslau, having attained to an age between 200 and 205.

136 Monut, John, a native of Scotland, 1776.
136 Mooney, Catherine, Tuam, Ireland, 1768.
136 Moval, Mr., surgeon, Langholm, Dumfries, 1776.
136 Sheile, James, Bally Baden, Kilkenny, Ireland, 1759.
136 A Negro, Richmond, County Virginia, 1818.
136 Foster, Margaret, Cumberland.
135 Thomson, Mrs., near Dublin, 1796.
135 A peasant at Grutz, in Voigtland, 1672.
134 Brockley, John, Devonshire, 1769.
134 Lopez, Catherine, Jamaica.
134 Auge, Mrs., Maryland, United States, 1763
133 Lloyd, Richard, Montgomery.
133 Rorke, Martha, Dromore, Ireland.
133 Keithe, Mrs., Newnham, Gloucestershire, 1772.
133 Marchant, Elizabeth, Hamilton, Baun, Ireland, 1761.
132 Leeson, Jane, London.
132 Cockey, Thomas, Blechingley.
132 Foster, Ann Newcastle 1777.
132 Maxwell, John, near Keswick, Cumberland, 1785.
132 Gilbert, Jeremy, Luton, Northamptonshire.
132 Holme, Gustavus a Dover pilot, 1685.
132 M'Culloch near Aberdeen. (a soldier), 1757.
131 Ellis Wm., seaman and shoemaker, Liverpool.
131 Sombyade Sieur, Hungary, 1764.
131 Taylor, Elizabeth London, 1763.
131 Tucker, John, Itchin Ferry, Hants, 1806.
131 Godon Peter, Auchterless, 1775.
130 Taylor John a mariner, Scotland, 1770.
130 Cameron, Donald, Kinnichlabar, Scotland, 1759.
130 Beale, Wm., Dungarvan, Ireland.
130 Battesworth, Joseph, Truro, Cornwall, 1749.
130 Meighan Mrs., Donoughore 1813.
130 Morel, Mr., surgeon, Dumfries, N. B., 1774.
130 Stewart, Lucretia, Kingstown Jamaica.
130 M'Bride Robert, Isle of Herries, 1780.
130 M'Kein, Wm., Richmond County, Virginia, U.S., 1818.
130 Portesca William Cornwall.
130 Martin, Thomas, Helmsley, Yorkshire, 1804.
130 Diamond, Ermine Kingston, Jamaica.
130 Hill, John, Lead Mills, near Edinburhh, 1767.
130 King John, Nokes, Oxfordshire, 1766.
130 Mestanea, Peter, Veniel, Murcia, Spain 1743.
129 Gale, Joseph, Westport Ireland 1768.
129 Gough John, Castletown Ireland, 1771.
129 Noom John, Galway, Ireland 1762.
128 Fleming, Mr., factor, Liverpool 1771.
128 Cameron Mary Braemar Inverness, 1784.
128 Major, John, Lantwert Major, Wales, 1763.
128 Yates, Mary, Shiffnal, Salop 1776.
128 Hoff, Edglebert Fish Hill near New York, 1765.
128 Hill, Thomas Flinton, Staffordshire, 1601.
128 Jacob, Jean, Mount Jura, 1790.
127 Johnson, William, Esq. Aldenham, Herts, 1768.
127 James Mary, Glunaskilly, Isle of Skye, 1814.
127 Jackson, Martha, Kil-James, Ireland, 1776.
127 Kirwan, Mr., Ferns, Ireland, 1718.
127 Montgomery, Robert, Skipton, Yorkshire, 1671.
127 Michaelstone, John, grandson of old Parr, 1763.
127 Mayden, Madame, St. Omer's, France, 1772.
127 Mullary, David, Liney, Ireland, 1774.
127 Newell, John, Esq., Michael's Town, Ireland, 1761.
127 Scrimshaw, Jane, Rosemary-lane Workhouse, London, 1711
127 Forthton, James, Esq., Grenada, 1773.
127 Carollan, Owen, Meath, Ireland, 1764.
127 Grant, David, Kinross, N.B., 1758.
127 Hughes, Wm., Tadcaster, Yorkshire, 1769.
126 Bayles, John, Northampton, 1706.

126 Bowles, Mrs., West Hanny, Berks, 1749.
126 Booker, Winder, Edward County, Virginia, 1819.
126 Hannay, Martha, Culley-backey, Ireland, 1808.
126 Phelan, Catherine, Borris, Queen's County, Ireland, 1789.
125 Creek, Thurlow, Suffolk, 1806.
125 Preston, Martha, Barnsley, Yorkshire, 1769.
125 Scott, Margaret, Dalkeith, Scotland, 1779.
125 Tice, John, Hagley, Worcestershire, 1774.
125 Clooster, M., Beeston. Westphalia, 1785.
125 Dorner, Richard. Hill of Allen. Ireland, 1850.
125 Grasmay. James Presburg, Hungary, 1740.
125 Jones. Mrs., Camberwell Workhouse, London, 1775.
155 Kirton, George, Oxnop Hall, Yorkshire, 1764.
125 Narodsky F., a Pole, Warsaw, 1814.
125 Ostroki, M., Tedersky, Poland. 1786.
124 Parr. Robert. Kniver. near Bridgenorth. Shropshire, 1757.
124 Fenn, Michael, Edlesburgh, Bucks, 1675.
124 Ferguson. David Broughton-under-the-Becon, Kent, 1818.
124 Bueno, Andrew Don, Badajoz. Portugal, 1753.
124 Brebner Catherine, near Aberdeen, 1762.
124 Gillett, M.. Augusta. Maine, U.S., 1814.
124 Nicforav, Alexie. a Russian peasant 1811.
124 Schmidt, Andrew. Teschen. Upper Silesia, 1758.
124 Vertot. Philip Louisde, Montpelier, France, 1786.
124 Wakeley, Wm.. Shiffnell. Salop, 1714.
124 Walney. John, Glasgow, 1757.
124 Wishart, Thomas. Annendale, Dumfries. 1760.
123 Wilson. Andrew. Galston. Ayrshire N.B. 1787.
123 Crewman, Joshua, Chelsea Hospital, 1793.
123 Debra, Andrew Brezin, Turin, 1774.
123 Johnson, Mrs., Belfast, Ireland, 1807.
123 Walker, Wm., Rochdale, 1736.
123 Spedding, Bridget, near Whitehaven, 1768.
123 Tait, Matthew, Anchinleek, Ayrshire, 1792.
122 Cameron, Archibald, Keith, Scotland, 1791.
122 Carman, Mrs., Fethard, Ireland, 1772.
122 Bownsmaison, Docarges, Lombez, France, 1777.
122 Delaney, George, South of France, 1769.
122 Giles, Catherine, Glenwherry Belfast, 1758.
122 Mullholland, Ann, Maghera, Derry, Ireland, 1826.
122 Sosnowsky. Peter Moscow, 1858.
122 Connor, Edward, Taylorstown. Wexford.
122 Benton, Mary, Durham, 1853.
121 Bren. Wm.. Braunston, Northamptonshire, 1789.
121 Bons Francis, France 1769.
121 Cole. Rev. Thos., Landnuwidneck. Cornwall, 1683.
121 Camoux. Hanibal Marseilles France, 1759.
121 Farr. William. Birmingham. carrier, 1770.
121 Wragg. Priscilla a negro. St. Jago. 1799.
121 Gray. Mrs.. Northfleet Kent, (deaf and dumb).
121 Hilton. Elizabeth, Liverpool. 1760.
121 Hubert, Matthew. Birr Ireland, 1764.
121 Lange Charles. Campbell Virginia U.S., 1821.
121 Long. Henrietta. Hoxton London. 1788.
121 Moran, Marystown King's County, 1848.
121 Maddox John, Holloway Head, Northwick, Gloster, 1824.
121 M'Ray, Margaret. near Thurse, N.B., 1771.
121 Spicer, Eleanor, Acornack, Virginia, U.S., 1773.
121 Shepherd, Sir Fleetwood, Essex, 1765.
121 Rider, John, (German) died near Dublin, 1769.
121 Malcomson, Sarah, Dramgoolen, near Rathfry, 1810.
121 Jacob, John, Mount Jura.
120 Tray, William, Waterford, Ireland, 1792.
120 Saporeschesky, Jevan, a Russian soldier, 1845.
120 Monno, Francis, Castro, Spain, 1767.
120 Martha, wife of a Moheagan Chief, U.S., 1806.
120 Nolan, Sarah, Moylas, Kerry, Ireland, 1806.

120 Pierce, Evan, Dolgelly, North Wales. 1753.
120 Marshall, William, Kirkcudbright N.B., 1792.
120 Macdonald, Flora West Highlands of Scotland, 1810.
120 Mackay, James, Cardigan, Wales 1763.
120 Joyce, Dominick, Carrowberg, Ireland, 1765.
120 Macharny, Susan, a mendicant. Dublin 1751.
120 Moore Mrs., Enniskillen. Ireland, 1765.
120 Gilbert, Thomas, Allensmere, Hertford, 1822.
120 Gilshenan, Mr. Donnell, Ireland. 1771.
120 Gale, Flora, Savannah-le-mere Jamaica, 1792.
120 Haynes John, Witney, Oxfordshire 1766.
120 Haye, M., (French), Hague Holland, 1774.
120 Clump, John. Kildare, Ireland, 1769.
120 Dyson. W., Wicklow, Ireland, 1764.
120 Edie, Wm., Cannongate, Edingurgh, 1781.
120 Sands, Mrs., Staffordshire.
120 Ashton, Mrs., London. 1768.
120 Aikin, Daniel, Canada West, 1848.
120 Dirrane, Aran, Galway.
120 Campbell, John, Dungarvon, Ireland, 1791.
120 Portell, Wm., France.
120 Cuffee, John, a slave Norfolk, Virginia, 1836.
120 Cotterel, Charles, Philadelphia, 1761.
120 Johnson, Mr., Birmingham.
120 Brown. Mr., Cornwall.
120 Wilson, Barbara, Wittingham, East Lothian. 1772.

We had originally intended to include in this list all recorded cases of deaths in this country at ages over 100, but we find the cases from 120 down to 100 so numerous that we pull up here, for want of space.

DIVISION III.

THEORY AND PRACTICE OF LIFE ASSURANCE.

INTRODUCTORY.

"It must be freely admitted that the works hitherto published on the subject do either partake of the advocacy of such partial and particular interests, or though they may be of undoubted value as affording Tabular facilities, and other practical illustration and information, they are not calculated, nor in fact were they intended for the familiar apprehension of general readers; while it must be evident that to produce the desired effect to encourage attention and inspire confidence, the subject should be cleared of all mystery, and made as free, plain, and unabstracted as possible. * * * The plans, professions, and pretensions of the different Offices must necessarily be full of complexity to persons who are not familiar with the variously modified principles, MUTUAL, PROPRIETARY, MINGLED [Mixed] or EXCLUSIVE, by which the different Offices profess to be governed. We therefore trust that the plain unbiassed exposition contained in the following pages will be received as an acceptable substitute for the mysteries of the Actuary, or the studied labours of the partial Advocate." —GEORGE ISABELL SOPER, *on Life Assurance Offices.*

The *theory* of Life Assurance is based upon the condition of equalising, in a pecuniary sense, the risks of life. The *practice*, of course, aims at the realisation of the theory. The actuary, by the aid of his *formulæ* demonstrates, most unmistakeably, the soundness of the one, and the practicability of the other: and none but the initiated are much the wiser. *We* write for the uninitiated: *our* formulæ must, therefore, be confined as much as possible to simple terms, and comprehensible figures: and however near we approach the actuarial ark we must not enter therein.

The supposition upon which the theory of Life Assurance is founded involves, or rather pre-supposes, another condition, namely, that of accurately measuring the risks, or in other words, the duration of life: for it would be impossible to equalise that which cannot be measured. This brings us at once to the subject of Mortality Tables; some account of which becomes necessary for the further understanding of the subject.

CHAPTER I.

MORTALITY TABLES, THEIR USES, CONSTRUCTION, AND DIFFERENCES.

The Life, or Mortality Table, is the key-stone or pivot upon which the whole science of Life Assurance hinges. Until this was invented the business of assuring lives was entirely a speculative one. It could be nothing else. There was no correct *measure* of the duration of human life at its various progressive stages: the risk was, therefore, undefined; and the rate of premium to be charged was necessarily arbitrary. The Offices would naturally protect themselves: therefore, the injury or loss fell upon the assured. We have already seen this in the case of the earlier Societies. Dr. Farr speaks of the Life Table as of equal importance in all enquiries connected with human life or sanitary improvements, as the barometer or thermometer or similar instruments in physical research; and the comparison is a good one. For even assuming a Society to have arrived at an equitable rate of premium for assuring lives, the Mortality Table is still required for the purpose of ascertaining the value of such premiums, for a prospective term of years, as against the value of the sums assured thereby, in order that statements of assets and liabilities may be from time to time prepared, and the financial aspect of the Society accurately determined. Without this no division of "profits" could ever be made, for the simple reason that it would be impossible to ascertain the amount of the surplus funds:* or indeed whether there was any surplus at all. The Life Table is, in fact, absolutely essential for "the solution of all questions depending upon the duration of human life."

We have already traced the beneficial influence which the construction of the earlier Mortality Tables had not only in facilitating the progress of Assurance Societies, but in improving their practice—forming, in fact, epochs in assurance history. As we proceed we shall discover the influence which the adoption of any particular Table may probably exercise over the destinies of the Office adopting it; or, at all events, for or against the assurers in such Office. For instance, a Table may be adopted which, while offering great advantages to those who assure at one age, may do great injustice to those at another age. We are not wasting time with mere idle suppositions: *such a Table* is actually in use. Another Table may exist which gives to ordinary Life Assurers all that they may desire, or reasonably expect, while for *annuity* transactions it would be the very last Table we should look to in driving a close bargain: such a Table as this also will hereafter be introduced to the reader. These points of comparison will be more particularly entered into in our remarks upon the "selection of an Office." We allude to them here that the reader may more fully comprehend the importance of understanding not only the principles of construction, but also the peculiarities and distinctions of the several Life Tables now in use, or upon which the existing Offices are based: and if we enter more minutely into these distinctions than at first sight might be expected in a popular treatise, or one professing to be so, the advantage will be hereafter both seen and felt. "Tell me a man's companions and I will tell you his character" is an admitted possibility. Tell us the Mortality Table upon which an Assurance Office is based, and it is equally possible—always assuming the existence of sound management—to predict its financial position and relative advantages!

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* A distinction must be drawn between the "Accumulated Fund" and the "Surplus Fund:" the former applies to the total funds of a Society—the latter to the amount in hand after providing for all liabilities.

The facts which we have presented in the preceding division,* although "of acknowledged value as *data* for determining the law of mortality,—as *bases* for calculations materially affecting the interests of millions,"—and not without considerable interest, combined with instruction in their "rough state,"—only assume a practical value for scientific purposes as they become collated and reduced to form; until, in fact, they have been properly "adjusted," "graduated," and "equated", or in plainer words, transformed into Life Tables.

As the three terms just placed in inverted commas assume a formidable aspect on the threshold of this section—more particularly after the gratuitous announcement of our intention to avoid technicalities—we may dispose of them by at once explaining that the process of *adjustment* or *graduation* by which a Life Table is made to represent as nearly as possible the progress of a human generation year by year through life, is employed upon the same principle that astronomers "reduce," as it is termed, all their observations to some common event or epoch. "By the term correcting or equating observations for nutation," says Herschell, "is always understood in astronomy the getting rid of a periodical cause of fluctuation and presenting a result, *not as it was observed*, but as it *would have been observed* had that cause of fluctuation had no existence." The same process has to be employed in the construction of Mortality Tables. A simple instance may be furnished. Between the ages of 15 and 25, and indeed up to later ages, the mortality is kept down in towns by the influx of healthy people (chiefly females) from the country: thus in London the annual mortality amongst young women, between the ages named, is only 6 per 1,000; while in the surrounding counties the mortality at the same age is from 7 to 8 per 1,000; and amongst *young men* in London, at the like age, it is 8 per 1,000. The solution is found in the fact that healthy young women of these ages go from the country into London, and other large towns, and obtain situations, and frequently, if they are taken ill, go back into the country to die.

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* Popular Notes on the Laws of Mortality.

The effect is to make towns look more healthy than the country, at these ages. Mortality Tables, constructed upon extensive data from town and country life, would not be materially effected by such fluctuations. Those based upon town observations only are certain to be more or less so, unless subjected to the processes just enumerated. They would, in fact, exhibit fictitious decrements at the ages enumerated if this "correction"—which implies the preceding processes—were omitted.

In former days these causes of fluctuation were not so well understood as now. A notable instance of this occurred in the construction of the Northampton Tables, by Dr. Price, and one which proves how trivial a circumstance may lead to important results for good or evil. At the time the data for this Table was recorded, there existed in the town of Northampton, as now, great numbers of Baptists, who repudiated infant baptism, and thus, by reducing the ratio of the christenings to the births, "induced Dr. Price to believe that the population *remained stationary;* whereas, it is shown from other sources, that it was, like the staple shoe-trade of the town, constantly increasing."* The average lifetime in that town, when the observations were taken, was in reality about 30 years. Dr. Price, chiefly by reason of the above circumstance, assumed it to be, by his Tables, only 24. It is *now* 37½, or 13 years *(one-half)* more than he took it to be! And as a curious confirmation of the error, the mortality of the *Equitable* Society (which as we know first used the Northampton Table) was *one-third less than that Table predicted.* But the most serious part of the business remains yet to be told. The Government adopted these Tables as the basis for its annuity schemes. The same error which gave the *Equitable,* and other Societies using the Table, *one-third too much premium,* induced the Government to grant annuities *by one-third too large* for the price charged, and before the error was rectified, about *two millions* of money was lost to the country by these annuity transactions.

This last fact furnishes a sufficient instance of the necessity for extended observation in order to obtain a thoroughly reliable basis, where such large interests are involved. "It can never be safe," said Mr. Morgan, in one of his earliest addresses to the Court of the *Equitable* Society—"It can never be safe to substitute conjecture for inquiry." No method of logical reasoning—no theory of philosophic speculation—can ever furnish us with reliable results for assurance purposes. This has already been proved in the case of most of the early Societies: although one cannot fail to be struck with the marvellous accuracy of some of the conjectures of *their founders.* But now, by the aid of careful observations, taken at various places, at various times, and by various persons, such a mass of data has been collected, presenting such a *unity of results,* as can hardly fail to create absolute astonishment in the minds of the newly initiated.

We recall another instance of the erroneous impressions which may be formed in the absence of correct data. The Registrar-General has referred to the fact that not very long since some of the best informed people believed LIVERPOOL to be *one of the healthiest spots in England!* and the late Mr. Rickman inserted, doubtless on what he at the time considered good authority, the following note in the Population Abstracts of 1831:—"*The great increase in the town of Liverpool is attributed to the salubrity of the air*, and the progressive improvement in its trade, commerce, steam navigation, and railroads." We have already seen that while the "mean duration" of life in Surrey is 45, and in the metropolis 37, in Liverpool it is only 26! But the comparison may be carried much further. The population of those parts of the county of Surrey (distinguished as extra-metropolitan) is about the same as that of Liverpool, yet in 1841 the deaths in Surrey were 4,256; in Liverpool 7,556![†] Again, according to the Surrey observations, 75,423 of 100,000 children born attain the age of 10 years; 52,060 live to the age of 50; and 28,038 to 70. In Liverpool only 48,211 of 100,000 live 10 years; 25,878 live 50 years; and 8,373 live 70 years! In the metropolis even 64,921 live 10 years; 41,309 live 50 years; and 16,344 live 70 years. At the age of 30 the "expectation" of life is 35 years in Surrey; 27 years in Liverpool: at 50 the expectation is 21 years in Surrey; 16 years in Liverpool.[*] At the Census of 1841, out of a population of 282,656, but 3 males and 11 females were returned at 95 years and upwards. Need more be said in support of the desirability of accurate information for the purposes of life calculations? It may be remarked, that in these examples Surrey has not been selected as the most healthy county; and further, that there are *parts* of most towns in England which are equally unhealthy with Liverpool.

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* Dr Farr.—The present system of "Registration" removes or obviates such difficulties

Mortality Tables, then, are obtained by observing the operations of the law of mortality, and by analysing, collating, and "correcting" the results so obtained. The process is both mathematical and scientific. The observations in a certain district will determine the mean duration of life in that district; and if a number of districts be observed upon, they will probably furnish something like a correct estimate of the *mean duration* throughout the entire kingdom. By the "mean duration" of life is meant the total number of years, or fractional parts of years, ordinarily attained by human beings. Thus, suppose the ages of 100,000 persons be accurately recorded at the time of their death, and the respective ages be cast into one aggregate sum, and this sum be divided by 100,000, the quotient—the hundredth-thousandth part of the whole—would be called the *mean* duration of life of the persons so enumerated. If the number of lives be small, or the period of observation be but short, the results will be likely to be far less accurate than if the numbers observed upon be large, and a fair time allowed for the observations. But other elements enter into the consideration. If the population be a fluctuating one, as where continued immigration or emigration are going on, it will be very difficult to get at the true average. For this reason such places as Bath, Cheltenham, Brighton, Leamington, Malvern, and Torquay would be very unsuitable for conducting such observations. Numbers of invalids

[*] Fifth Report of Registrar-General.

[†] *Vide twentieth Report of Registrar-General* p. 175—Note 1866.

resort to them, and *their* deaths greatly swell the mortuary registers; thus making the most healthy places appear to common observers the least so. This circumstance very forcibly struck us during a stroll through the Bath Cemetery some time since, musing upon "departed greatness," as glowingly recorded upon the tomb-stones there. They present an aggregation of "virtues" chiefly imported from distant places. It is the same with the other places named, and with all places of a similar character.

Mr. Peter Hardy, the actuary ot the *London Assurance Corporation*, enumerates more particularly the elements which must be taken into account in the construction of Mortality Tables, or in estimating the gradual decrement of life:—

> "To determine these numbers, or in point of fact. to determine the theory or law which governs the waste of human life in its various stages, requires the aid of the mathematician and the statist; and more than the mere power of observation is required here. The progress of medical science, the increase or decrease of temperance, the introduction of new luxuries, the price of labour and provisions, the degree of cultivation given to the land, the amount of the imports and exports of the country—these are all more or less necessary and important elements in determining the laws of mortality; or, in other words, in enabling us to make a fair estimate or assumption of the number of individuals who will die in the course of one year, out of a certain number of individuals at the commencement of that year."*

And it will be seen that all these points are noted in the progress of our enquiry.

The first idea, or outline of a Mortality Table in this kingdom, was undoubtedly traced by *Graunt*, whose career and speculations we have reviewed in a previous division. In his observations on the bills of mortality (1662-1676), he says, "We have found that of 100 quick conceptions, about 36 of them die before they be 6 years old, and that, perhaps, but one surviveth 76." He then produces figures to shew, that "of all which have been conceived," there were alive at the time he wrote but 40 per cent. above 16 years old," and "25 above 26 years old." But as we have no proof that these deductions were based upon any recorded facts, or that they were indeed anything more than the surmises of a shrewd and clever observer, no scientific value has been attached to them, although a history of mortality observations can be hardly considered complete which entirely overlooks them. So, again, with the recorded Table of the Prætorian Præfect, *Ulpianus* (Ulpian), "one of the most eminent commentators on the Justinian Code;" of the origin of which Table Mr. Hendriks has given the following particulars. About the time of the division of the Roman Empire (A.D. 364) the *Falcidian law* was in force, which prevented a testator from leaving more than three-fourths of his property to any others than legally constituted heirs. The Roman lawyers, therefore, found it necessary to consider and frame a Table by which *annuities* could be valued so as to meet the requirements of this law. It was then that Ulpian produced the Table given below, and which, considering its general accuracy, affords considerable room for conjecture as to how the materials for constructing the Table were obtained. We know, and have already referred to the fact, that in the Roman empire careful enumerations of the people *living*, from time to time, took place. But we have also seen that for the construction of Mortality Tables a careful record of the number of births and deaths, and also of the *ages* at death, is required; and we have no knowledge that a record of births was observed, although we have previously noticed that *deaths*, at least when above a certain age, *were recorded.*

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* Assurance Record.

By whatever means Ulpian obtained his data, the results show "no mean skill and discrimination" on his part; and their approximation to results obtained from other (although perhaps not very dissimilar) data many centuries afterwards, is not the least remarkable feature in connection with them. It will occur to many of our readers that in modern Tables for the valuation of annuities, (as indeed for all purposes of Life Assurance,) *interest* is a very important element in the calculation. Ulpian's Table bears no evidence of the existence of this element of consideration; and it is the opinion of the best writers that the Table must be looked upon simply as recording the *expectation of life* at that period: on which view "it is manifest that the old Roman jurisprudence gave far more correct views of the comparative value of life at different ages than the moderns possessed, in a popular way, until nearly the close of the 17th century."[*]

Here is the Table, and side by side with it, the expectation of life (male and female), as deduced by Dr. Price from the proportions of the living to the numbers who died in *Stockholm* at all ages for nine years, from 1755 to 1763:—

Ages.	Expectation of Males and Females. Roman Life. (Ulpian.)	Ages.	Expectation of Males. Stockholm Life. (Dr Price.)	Expectation of Females. Stockholm Life. (Dr. Price.)
Birth to 20	30 years.	Birth	14 years.	18 years.
20 ,, 25	28 ,,	5	31 ,,	37 ,,
25 ,, 30	25 ,,	10	30 ,,	37 ,,
30 ,, 35	22 ,,	15	27 ,,	33 ,,
35 ,, 40	20 ,,	20	24 ,,	30 ,,
40 ,, 41	19 ,,	25	21 ,,	27 ,,
41 ,, 42	18 ,,	30	19 ,,	24 ,,
42 ,, 43	17 ,,	35	18 ,,	22 ,,
43 ,, 44	16 ,,	40	16 ,,	19 ,,
44 ,, 45	15 ,,	45	14 ,,	17 ,,
45 ,, 46	14 ,,	50	12 ,,	15 ,,
46 ,, 47	13 ,,	55	10 ,,	13 ,,
47 ,, 48	12 ,,	60	9 ,,	10 ,,
48 ,, 49	11 ,,	65	7 ,,	8 ,,
49 ,, 50	10 ,,	70	6 ,,	6 ,,
50 ,, 55	9 ,,	75	4 ,,	4 ,,
55 ,, 60	7 ,,			,,
60 and upwards	5 ,,			,,

The resemblance is seen to be greater with the females than the males up to age 40, and afterwards the reverse. This would seem rather to lessen the force of a supposition by some writers, that as

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[†] Hendriks. Since this was written some talented observations have been made upon Ulpian's Table, and the data on which it might be founded, by W. B. Hodge, Esq., vide vol. 6 Assurance Magazine, p. 313-14; also in an able article in the 8th ed. of the Encyclopædia Britannica on "Life Assurance," attributed to William Thomas Thomson, Esq., the Actuary of the Standard and Colonial Offices. The concluding paragraph says, "It seems abundantly evident that Ulpianus' estimate must have been based on actual observations in some form, but the Romans must have had a miserable chance of life in old age."

the Roman enumerations were taken for the purposes of estimating the power of the country for recruiting her legions of warriors, the observations were more particularly confined to the males. These considerations, however, we leave to more learned heads.

The earliest English Life Table, properly so called, was invented by Halley, the "illustrious astronomer," who "first ventured to predict the return of a comet, which appeared accordingly in 1759." "By this simple and elegant Table," says Dr. Farr, "the mean duration of human life, uncertain as it appears to be, and as it is with reference to individuals, can be determined with the greatest accuracy in nations, or in still smaller communities." The *form* is here referred to, not the method of construction, which has been considerably improved. "Dr. Halley," says Mr. Pocock, "first shewed how the price to be paid for the Assurance of a life might be justly and scientifically regulated, and pointed out the real odds between assuring the life of a man aged 20, and that of another aged 50; his Table proving it to be 100 to 1 that the former, and little more than 30 to 1 that the latter, would not die in a year."*

After Halley had computed his Mortality Table, he proceeded to form Annuity Values, and succeeded in doing so; but as he computed at one rate of interest only, 6 per cent., and the values were given for every fifth year merely, his results were very limited in their application. From this period the subject of Life Annuities grew gradually into note.†

We cannot pass over this period without reverting to the early speculations of De Wit. In a recent publication his claims and those of Halley have been compared and commented upon with singular ability and fairness.

> "Dr. Halley may be designed, then, the discoverer and scientific arranger of what are called Life Tables; but there is no doubt that De Wit preceded him by some years in the elimination of a method by which the true value of a Life Annuity could be obtained. Halley was more scientific than De Wit; but there is no occasion to place the one above the other—they both made important discoveries and valuable additions to our knowledge, and without clashing they may be referred to as the originators of the application of the doctrine of probabilities of life and death to practical uses."‡

The relative and oft-disputed claims of Simpson and De Moivre are disposed of with similar brevity:—

> "The whole subject is treated by Mr. Simpson in a much more perspicuous manner than by any previous writer. His formulæ are general, and adapted to any Table of Mortality, and although De Moivre pourtrayed the method of obtaining the Annuities on lives of a younger age, from the values at the immediately preceding age, still we must allow that the advancement of the science is more attributable to Simpson than to De Moivre."

Simpson was of opinion that the Breslau Table was in no way applicable to London; hence probably his reason for compiling his London Table of Mortality.

The following Tables are constructed upon precisely the same plan as Halley's. We have selected the *Carlisle and English Tables* for examples, because the former is that used by the majority of the existing Offices; while the latter is that which will most probably be used by Offices to be hereafter established. In each case 10,000 lives are taken for observation, and the deaths to the number remaining alive at the commencement of each year is shown, until the entire number is exhausted. The results are placed in parallel columns, for the purposes of comparison hereafter.* It will be observed, that they do not vary very much; but the Carlisle Table shews the lightest mortality, except at the extreme ages: namely, from 0 to 5, and from 74 down to the end of the Table, with the exception of one or two years. The minimum mortality in the Carlise Table occurs at the age of 10; in the English Table at 12. This form of Table must be based upon actual observation, in the district or county to which it relates: the fluctuations being "corrected" by the processes already indicated. It is the preliminary step, or the basis from which other Tables are to be produced.

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* Pocock on Life Assurance. † Vide W. T. Thomson on Life Assurance.

‡ W. T. Thomson on Life Assurancee, 1856.

By these Tables the *probable* duration of life may be seen at a glance—it is the time *when the number observed upon is reduced to one half.* In the Carlisle Table this occurs at 41; in the English Table at 45. As the English Life Table is the most recently constructed, and has been drawn from the mortality of the entire kingdom, it may be presumed to present more accurate results than any other existing Table: we shall therefore confine our examples chiefly to it. This Table shows the number reduced to 5,030 at 45—at 45½ they would be reduced just below 5,000. It is therefore "an *even* wager," or risk, on the birth of a child, that it will live 45½ years—the chances of its living to, or dying before, that age being as nearly as possible equal. How long is it probable that a person aged 20 will live? The number living at age 20 is 6,605, the half of which is 3,302. Now if we look down the column until we find the number nearest to this last, it is at age 64: the probable duration is therefore 44 years: 20 and 44=64. Again, what is the *probable* life of a person at 60? The same process is gone through. The number against the age is 3,799: the half 1,899. Looking down the Table we find 3,799 has become reduced to 1,899 at age 74: at 60, therefore, it is probable a man will live 14 years. The Table may be used in a similar manner for any other ages, although it is quite unnecessary, except for the purpose of becoming familiar with the process, as we shall presently give a Table of the "Mean Expectation" of life at all ages, which differs slightly from what is termed the probable duration of life, by reason of certain "*corrections*" to which the results have to be submitted. This is precisely the plan upon which Halley proceeded.

In the days when "wagering assurances" were at their height, it was of importance to the policy-mongers to know not simply the expectation of life at various ages, but also the "odds," or chances of life against death at various ages. These Halley also deduced from his Table. His plan was to divide the number of persons remaining after the age of any individual life, by the difference between that number and the number living at the age to which it is proposed he should live. As his Tables stated 567 out of 1,000 persons to be living at the age of 25, and 560 at the age of 26, a person of the former age had the chance of 560 to 7, or 80 to 1, that *he would not die within*

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* *See Table on next page.*

11

Carlisle Table. MALE AND FEMALE.			English Life Table. No. I. MALE AND FEMALE.			Carlisle Table. MALE AND FEMALE.			English Life Table. No. I. MALE AND FEMALE.		
Age.	Number who complete that Year.	Number who died during the next year.	Age.	Number who complete that Year.	Number who died during the next year.	Age.	Number who complete that Year.	Number who died during the next Year.	Age.	Number who complete that Year.	Number who died during the next year.
0	10000	1539	0	10000	1463	53	4211	68	53	4434	76
1	8461	682	1	8536	526	54	4143	70	54	4358	78
2	7779	505	2	8010	271	55	4073	73	55	4279	84
3	7274	276	3	7739	185	56	4000	76	56	4194	90
4	6998	201	4	7553	133	57	3924	82	57	4103	96
5	6797	121	5	7420	104	58	3842	93	58	4007	101
6	6676	82	6	7315	83	59	3749	106	59	3906	106
7	6594	58	7	7232	67	60	3643	122	60	3799	112
8	6536	43	8	7164	56	61	3521	126	61	3687	117
9	6493	33	9	7108	46	62	3395	127	62	3569	123
10	6460	29	10	7061	39	63	3268	125	63	3446	128
11	6431	31	11	7022	36	64	3143	125	64	3318	133
12	6400	32	12	6985	35	65	3018	124	65	3185	138
13	6368	33	13	6950	41	66	2894	123	66	3046	142
14	6335	35	14	6909	46	67	2771	123	67	2904	147
15	6300	39	15	6862	49	68	2648	123	68	2759	150
16	6261	42	16	6813	50	69	2525	124	69	2606	153
17	6219	43	17	6762	51	70	2401	124	70	2453	156
18	6176	43	18	6710	52	71	2277	134	71	2297	157
19	6133	43	19	6658	52	72	2143	146	72	2139	158
20	6090	43	20	6605	53	73	1997	156	73	1981	158
21	6047	42	21	6552	54	74	1841	166	74	1823	156
22	6005	42	22	6497	55	75	1675	160	75	1666	154
23	5963	42	23	6442	56	76	1515	156	76	1512	151
24	5921	42	24	6386	56	77	1359	146	77	1360	146
25	5879	43	25	6329	57	78	1213	132	78	1214	140
26	5836	43	26	6271	58	79	1081	128	79	1073	134
27	5793	45	27	6213	59	80	953	116	80	939	126
28	5748	50	28	6154	60	81	837	112	81	813	117
29	5698	56	29	6094	60	82	725	102	82	696	108
30	5642	57	30	6033	61	83	623	94	83	588	98
31	5585	57	31	5971	62	84	529	84	84	490	87
32	5528	56	32	5909	63	85	445	78	85	402	77
33	5472	55	33	5845	63	86	367	71	86	324	67
34	5417	55	34	5782	64	87	296	64	87	257	57
35	5362	55	35	5717	65	88	232	51	88	200	47
36	5307	56	36	5651	66	89	181	39	89	152	38
37	5251	57	37	5585	66	90	142	37	90	114	31
38	5194	58	38	5518	67	91	105	30	91	82	24
39	5136	61	39	5451	68	92	75	21	92	58	18
40	5075	66	40	5382	69	93	54	14	93	40	13
41	5009	69	41	5313	69	94	40	10	94	27	9
42	4940	71	42	5243	70	95	30	7	95	17	6
43	4869	71	43	5173	71	96	23	5	96	11	4
44	4798	71	44	5102	71	97	18	4	97	6	2
45	4727	70	45	5030	72	98	14	3	98	4	1
46	4657	69	46	4957	73	99	11	2	99	2	
47	4588	67	47	4884	73	100	9	2	100	1	
48	4521	63	48	4811	74	101	7	2	101	1	
49	4458	61	49	4736	74	102	5	2	102		
50	4397	59	50	4662	75	103	3	2	103		
51	4338	62	51	4586	75	104	1	1	104		
52	*4276*	65	52	4511	76						

the year. Again, for ascertaining the chance that any person would not die before he should arrive at any given age, divide the number of persons alive at that age, by the difference between that number and the number of those living at the age of the individual:—for instance, to determine the chance that a person aged 40 should live 7 years longer, the Table shewed 445 persons to be living at 40, and 377 at 47; the difference between which numbers is 68, and the chance in favor of life is 377, divided by 68, or about 5½ to 1.*

Addison, in his "Vision of Mirza," writing probably with a graduated Life Table before him of the sort just given (for Halley had then published his Table) introduces the following allegory:—

> "The bridge thou seest said he, is *Human Life;* consider it attentively. Upon a more leisurely survey of it, I found that it consisted of *three score and ten entire arches*, with several broken arches, which, added to those that were entire, made up the number *about an hundred*. As I was counting the arches, the Genius told me that this bridge consisted at first of a *thousand arches;* but that a great flood swept away the rest, and left the bridge in the ruinous condition I now beheld it. But tell me further, said he what thou discoverest on it. I see multitudes of people passing over it, said I, and a black cloud hanging on each end of it. As I looked more attentively, I saw several of the passengers dropping through the bridge into the great tide that flowed underneath it: and upon further examination perceived that there were innumerable trap-doors that lay concealed in the bridge which the passengers no sooner trod upon, but they fell through them into the tide and immediately disappeared. These hidden pit-falls were set very thick at the entrance of the bridge so that throngs of people no sooner break through the cloud, but many of them fell into them. They grew *thinner towards the middle*, but multiplied and laid closer together towards the end of the arches that were entire. There were indeed, some persons, but their number was very small, that continued a kind of hobbling march of the broken arches, but fell through one after another, being quite tired and spent with so long a walk."†

Those who take the trouble to look carefully at the preceding Tables, will discover the beautiful simplicity of this description. It more particularly illustrates the third column of the Table; namely, that which shews how many may be expected to die in *each year*. The "three score and ten entire arches," refers to the supposed scriptural limitation of human life, and the "broken arches" to those who survive to longer periods. The "thousand arches" of course relates to the ages of the Patriarchs; and the "great flood" to the deluge, in conformity with a prevailing notion that the period of human life was considerably lessened after that event. It is probable, however, that the *real* change was in the mode of recording time, and not in the physiological laws relating to the human race. "Our Life Table," says Dr. Farr, "follows 'a throng' of 100,000 (*we* have taken 10,000 only) that 'brake through the cloud' into life at the same moment, and counts them as they step on every arch. It shows, therefore, how many fall through the 'hidden pit-falls.' The danger is exactly measured. The arches over which sickly multitudes pass, are the same in number as those traversed by a healthy people; but the 'trap-doors' and 'hidden pit-falls' in their way are twice as numerous, though they can only be perceived by careful observation and counting; while a difference of 26 and 45 'arches' would be obvious to the unassisted eye."

But we have seen, in a previous division, that a difference exists in the duration of male and female life; and it has been thought desirable to demonstrate this difference by Tables constructed on distinct observations of the sexes. The following Table furnishes the result. It is based upon the same data as the English Life Table just referred to, but the example is extended to 100,000 of each sex, that the differences may be more easily apparent; and to save space the quinquennial results only are given after the first five years, except where necessary to illustrate the examples which follow :—

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* Pocock on Life Assurance.

† The "Spectator," No. 159, published 1711.

Age.	Living at each year of age.	Males	Females.	Dying in the next year.	Males.	Females.
0	100,000	51,274	48,726	14,631	8170	6461
1	85,369	43,104	42,265	5,267	2716	2551
2	80,102	40,388	39,714	2,710	1370	1340
3	77,392	39,018	38,374	1,853	954	899
4	75,539	38,064	37,475	1,338	679	659
5	74,201	37,385	36,816	1,047	542	505
10	70,612	35,564	35,048	392	179	213
12	69,856	35,206	34,650	351	178	173
15	68,627	34,573	34,054	497	240	257
20	66,059	33,324	32,735	537	264	273
25	63,295	31,958	31,337	576	287	289
30	60,332	30,473	29,859	617	312	305
35	57,172	28,867	28,305	654	335	319
40	53,825	27,145	26,680	691	358	333
45	50,301	25,311	24,990	724	379	345
50	46,621	23,376	23,245	753	398	355
55	42,796	21,355	21,441	849	449	400
60	37,996	18,808	19,188	1,122	592	530
65	31,852	15,589	16,263	1,383	717	666
66	30,169	14,872	15,597	1,427	737	690
70	24,531	11,823	12,708	1,560	792	768
73	19,814	9,439	10,375	1,581	791	790
75	16,664	7,867	8,797	1,544	764	780
80	9,398	4,316	5,082	1,262	604	658
85	4,021	1,780	2,241	774	355	419
90	1,140	481	659	311	135	176
95	174	69	105	64	25	39
100	16	7	9	6	2	4
105	1	—	—	1	—	—

The *minimum* mortality for both males and females occurs (by this Table) in the 12th year. But while the *proboble* life of a boy is only 44 years, that of a girl is 47. The *probable* life at various ages is ascertained precisely in the same manner as in the other Table, although, as the sexes are here distinguished, the results will be different. The "probable" life of a woman, aged 25, is found by glancing down the fourth column. The figures opposite that age are 31,337. The nearest number to the half of this is found at age 66 (15,597), therefore, the probability is 25 from 66, or 41 years. So the probable life of a man at 60 is found by glancing down the third column, where the No. 18,808 is obtained; the half is found at age 73, shewing the probable life to be 13 years.

As the Tables we have just given form the basis for determining the "expectation" of life, and also the foundation from which all annual and other life premiums are deduced, it should be understood that there are at least two ways of constructing them. *First:* By a comparison of the *deaths* and the *living* at each age, which gives the rate of mortality and survivorship. *Secondly:* from the deaths alone, or with reference only to the ages at which the deaths have taken place. "Tables constructed on the former plan," Dr. Price says, "must be correct." But, unfortunately, from the want of proper materials, both himself and Dr. Halley had to adopt the second plan. Dr. Farr says, "The mortality obtained by dividing the deaths by the living (as in the first example) *is an unimpeachable test:* it is the preliminary to the construction *of a true Life Table.*" And he adds, "The ratio of the total deaths to the total population affords the next best test that can be employed." Professor De Morgan says, "If in any one year a complete census were made registering the age of every individual, and if the deaths which took place in the 365 days next following the day of the census were noted, the law of mortality could be deduced." This is a reiteration of the first of the above plans, and is that upon which the English Life Table was constructed. Tables constructed upon the second plan "are only correct if the population of the place, among whom the deaths occur, is stationary; if the births and deaths are equal; and if there be no disturbing migration for a century"—events very rarely to be met with. The most conflicting results are necessarily obtained by incomplete observations:—thus while Mr. Finlaison's Table makes females at 20 live 44 years. and males 38½ the "Experience" Table presents a result exactly the reverse: females selected for assurance at 20 have according to this Table an expectation of nearly 36 years; males of very nearly 40 years.* In the one case the observations were confined to Government annuitants;—in the other to assured lives in a limited number of Offices only. In both cases the area of observation was no doubt too small.

The desirability of having Life Tables based upon the *mortality returns of the whole kingdom*—or what may properly be termed *national Life Tables*—was very forcibly pointed out by Mr. Baily at the commencement of the present century:—

> "The Tables of observations (he says) most used in this country at present are those which were framed by Dr. Price, from the bills of mortality of Northampton; *but they derive their importance principally from those numerous Tables of the value of annuities on single and joint lives which are computed therefrom;* and which afford great facility to the solution of the various cases connected with this subject. In every other point of view it must appear extremely incorrect *to take the rate of mortality in one particular town as a criterion for that of the whole country.* The observations ought to be made on the kingdom at large, in the same manner as in Sweden; more particularly as, in the real business of life, the calculations are general and uniform, and adapted to persons in every situation. But till the Legislature thinks proper to adopt some efficient plan for furnishing these data, we must rest contented with the laudable exertions of public spirited individuals, and avail ourselves of the best light which they afford us on this subject . . . But in many instances, both of annuities and assurances, the ages and conditions of the lives are so involved that we must proceed upon general principles, without reference to the particular situation of the parties; and, therefore, *were it on this ground only, it would be extremely desirable to ascertain the rate of mortality in the kingdom at large. It would enable us to determine how far the Tables now in use might be depended upon, and furnish the basis for others more numerous and comprehensive.*"

The English Life Table has the advantage of being so constructed. It shews out of 100,000 (or 10,000) children born alive, the respective number of males and females born, and the numbers attaining each age, or birth-day, from the 1st to the 110th according to the rate and laws of mortality, deduced from the returns of the population, births, and deaths in England in 1841. Thus, in 100,000 children born alive, 51,274 are boys, and 48,726 girls; 33,060 males and 32,464 females attain the age of 21; and 11,824 males, and 12,708 females live to 70. The males and females are not distinguished in Halley's Table, in the Northampton Table, or the Carlisle Table. In the Swedish Table, however, Dr. Price did distinguish males and females, making 10,000 of each sex the basis of his observations.

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* Fifth Report of Registrar-General.

We may now introduce the reader to the next stage in the development of Mortality Tables; namely, that which, after the processes of equating and correcting, furnishes the actual *expectation* of life at all ages, from birth upwards. This is by far the most interesting Table* to the general reader; and it is otherwise of great value. By its aid the pecuniary value of leases, advowsons, and all matters or things dependent upon the duration of human life may be determined; the question or rate of *interest*, however, being always an important element. But, independently of these, the Table possesses intrinsic interest on account of the curious facts it discloses regarding the duration of life.

We shall confine our examples chiefly to the results of the English Table, as given in the last three columns, although, for the purposes of comparison, and to avoid repetition, we have placed the Northampton and Carlisle expectancies in parallel columns.

The expectation from being 41 years and 2 months (sexes combined) at birth (per English Life Table) has increased at the end of the first year to 47 years and 2 months, while by the end of the 4th year it has come to be 50 years and 1 month, or just upon nine years greater than it was at birth four years previously. Such is the result of having escaped the dangers of childhood. From this maximum point, however, it steadily grows less, year by year—not that every year a man lives lessens his expectation so much, as may be seen by the Table—until at 90 it is reduced to two years and nine months—or, dividing the sexes, to two years and eight months for males, and two years and nine months for females, being only one month difference. The Northampton Table gives an expectation of only 25 years and 2 months at birth, and its maximum (at the completion of the sixth year) is only 41 years and 1 month, being 10 years and 2 months less than the maximum of the Carlisle Table, age 5; and exactly 10 years less than the English Table, at its maximum age 4. The above expectancy is not that of the original Northampton Table, but of the one which, after various corrections, was published by Dr. Price, in the fourth edition of his famous work on Reversionary Payments and Annuities, published about 1783.

It may be useful to the reader to be acquainted with some *short rule* for arriving at the expectancy of life according to the three Tables we have given, which are those most in use, as the Tables cannot always be at hand for the purpose of reference. Speaking of the English Table first, at ages ranging from 20 or 25 up to 45, use the *fixed number* 96—deduct the present age of the person whose expectancy you desire to know from this number, and the half of the

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* *See Table on next page.*

TABLE

Showing the "EXPECTATION" of Life at all Ages.

Age.	Northampton.		Carlisle. — Male and Female.		English Life Table, No. 1.					
					Male and Female.		Male.		Female.	
	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Yrs	Ms.	Yrs.	Ms.
0	25	2	38	9	41	2	40	2	42	2
1	32	9	44	8	47	2	46	9	47	7
2	37	10	47	7	49	2	48	10	49	7
3	39	7	49	10	49	11	49	6	50	4
4	40	7	50	9	50	1	49	9	50	6
5	40	10	51	3	50	0	49	8	50	5
6	41	1	51	2	49	9	49	4	50	1
7	41	0	50	10	49	3	48	11	49	8
8	40	9	50	3	48	9	48	5	49	1
9	40	4	49	7	48	1	47	9	48	5
10	39	9	48	10	47	5	47	1	47	10
11	39	2	48	0	46	9	46	4	47	1
12	38	6	47	3	46	0	45	6	46	4
13	37	10	46	6	45	2	47	9	45	7
14	37	2	45	9	44	5	44	0	44	10
15	36	6	45	0	43	8	43	4	44	1
16	35	10	44	3	43	0	42	8	43	5
17	35	2	43	7	42	4	42	0	42	10
18	34	7	42	10	41	8	41	3	42	1
19	34	0	42	2	41	0	40	7	41	6
20	33	5	41	6	40	4	39	11	40	10
21	32	11	40	9	39	8	39	2	40	2
22	32	4	40	0	39	0	38	6	39	6
23	31	11	39	4	38	4	37	10	38	10
24	31	4	38	7	37	8	37	2	38	2
25	30	10	37	10	37	0	36	6	37	6
26	30	4	37	2	36	4	35	10	36	10
27	29	10	36	5	35	8	35	1	36	2
28	29	4	35	8	35	0	34	6	35	7
29	28	9	35	0	34	4	33	10	34	11
30	28	3	34	4	33	8	33	2	34	3
31	27	9	33	8	33	0	32	6	33	7
32	27	3	33	0	32	4	31	10	32	11
33	26	9	32	4	31	8	31	2	32	3
34	26	2	31	8	31	1	30	6	31	8
35	25	8	31	0	30	5	29	10	31	0
36	25	2	30	4	29	9	29	2	30	4
37	24	8	29	8	29	1	28	6	29	8
38	24	2	29	0	28	5	27	10	29	0
39	23	7	28	3	27	9	27	2	28	5
40	23	1	27	7	27	2	26	6	27	9
41	22	7	27	0	26	6	25	11	27	1
42	22	0	26	4	25	10	25	3	26	5
43	21	6	25	9	25	2	24	7	25	9
44	21	0	25	1	24	6	24	0	25	1
45	20	6	24	6	23	10	23	4	24	5
46	20	0	23	10	23	2	22	8	23	9
47	19	6	23	2	22	6	22	0	23	1
48	19	0	22	6	21	10	21	4	22	5
49	18	6	21	10	21	2	20	8	21	9
50	18	0	21	1	20	7	20	0	21	1
51	17	6	20	5	19	10	19	4	20	4
52	17	0	19	8	19	2	18	9	19	9
53	16	6	19	0	18	6	18	0	19	0
54	16	1	18	3	17	10	17	4	18	4
55	15	7	17	7	17	2	16	8	17	8
56	15	1	16	11	16	6	16	0	17	0
57	14	8	16	3	15	10	15	5	16	4
58	14	2	15	7	15	2	14	9	15	8
59	13	8	14	11	14	7	14	2	15	0
60	13	2	14	11	14	0	13	7	14	5
61	12	9	13	10	13	5	13	0	13	9
62	12	3	13	4	12	10	12	8	13	2
63	11	10	12	10	12	3	11	11	12	8
64	11	4	12	4	11	9	11	4	12	1
65	10	11	11	9	11	2	10	10	11	6
66	10	5	11	3	10	8	10	4	11	0
67	10	0	10	9	10	2	9	11	10	6
68	9	6	10	3	9	8	9	5	10	0
69	9	1	9	9	9	3	8	11	9	6
70	8	7	9	2	8	9	8	6	9	0
71	8	2	8	8	8	4	8	1	8	7
72	7	9	8	2	7	11	7	8	8	2
73	7	4	7	9	7	6	7	4	7	9
74	6	11	7	4	7	1	6	11	7	4
75	6	6	7	0	6	9	6	6	6	11
76	6	2	6	8	6	5	6	2	6	6
77	5	10	6	5	6	0	5	10	6	2
78	5	6	6	1	5	8	5	6	5	10
79	5	1	5	10	5	4	5	3	5	6
80	4	9	5	6	5	1	4	11	5	2
81	4	5	5	3	4	9	4	8	4	11
82	4	1	4	11	4	6	4	4	4	7
83	3	10	4	8	4	3	4	1	4	4
84	3	7	4	5	4	0	3	11	4	1
85	3	4	4	1	3	9	3	8	3	10
86	3	2	3	11	3	6	3	5	3	7
87	3	0	3	9	3	4	3	2	3	4
88	2	10	3	7	3	1	3	0	3	2
89	2	8	3	6	2	11	2	10	3	0
90	2	5	3	4	2	9	2	8	2	9
91	2	1	3	3	2	7	2	6	2	7
92	1	9	3	5	2	5	2	5	2	5
93	1	4	3	6	2	4	2	4	2	3
94	1	1	3	7	2	2	2	3	2	2
95	0	8	3	7	2	1	2	2	2	1
96	0	6	3	6						
97			3	3						
98			3	1						
99			2	9						
100			2	3						
101			1	9						
102			1	4						
103			0	10						

remainder will give the expectancy within a few months. Take for example the age 30—that from 96 leaves 66—the half of which is 33—the Table gives only eight months more. For ages above 45 take 90 for the fixed number, and proceed as before. This applies to the sexes jointly. For females separately a year may be added to the fixed numbers given: for males a year taken off. By making the fixed numbers 97 and 91, they will apply to the Carlisle Table—or the mean of these, 94, may be taken as applicable to all ages where exactitude is not of much importance. For the Northampton Expectation the fixed number may be 86, for all, eexcept the ages over 75, when it may be raised to 90: for the higher ages in this Table nearly correspond with the others.

Of course the results in the preceding and other Tables which will be given, are based on an average of lives. Constitutions possessed of more than average strength will live beyond the average expectation, and *vice versa.* Where the circumstances are even, the variation will be *nil*, or nearly so. We have, in the previous sections of this division, given numerous instances of the uniformity of operation every where observable in connection with mortality enquiries. But it may be well to pause here, and enquire how this uniformity is produced: otherwise we may attribute to it greater importance than it deserves, or at all events arrive at false conclusions regarding it.

Dr. Farr has very properly pointed out that this uniformity *does not imply that the external circumstances in which men live have no influence on the duration of life;* it only tends to prove that life being regulated by constant laws, the circumstances adverse or favourable to existence produce, *by compensation of various kinds*, the same results. Professor de Morgan says on the same subject:—

> "The fluctuations of mortality have of themselves a tendency to create opposite fluctuations. Thus, a very sickly season carries off the weak, and deprives the succeeding years of those who were most likely to have died; causing therefore a season of remarkable health. This is a very important item in the theory of the fluctuations of mortality . . . . . It reduces annual fluctuation itself to a species of regularity, and is, perhaps, the sufficient reason for a slightness of the total fluctuations."

It has been cited as an instance in support of these views, that the risk which females encounter at the child-bearing age is compensated for in males by the violent deaths they are subjected to during the same period on rivers, on the sea-coast, in mines, in the streets, in travelling, and in their dangerous occupations; by the accumulation of workmen in ill-ventilated shops, or the hard exhausting work of the agricultural labourer, independently of war, and service in unhealthy climates. To these may be added mental agitations and anxieties, terminating unhappily sometimes in suicide—altogether making the chance of living from 25 to 45 rather in favour of English *women!*[*] The operation of this *law of compensation* is everywhere traceable throughout mortality observations: indeed it pervades all nature. The astronomer recognizes its influence in the remotest regions of space: the philosopher finds it ever present with his enquiries; reconciling and harmonising the results. The moralist trusts to it when other hopes fail him. The phrenologist knows its influence in the nicelybalanced operations of the human will, and the subjugation of the passions, while the divine derives aid and consolation from it, and traces it to the sacred origin from which it first sprang.

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[*] Vide Fifth Report of Registrar-General

We must now proceed to notice, more in detail, the data upon which the several Life Tables we have already, or shall hereafter have occasion, to refer to, have been based; also the sources from which such data have been obtained. We may best accomplish this purpose by the following tabulated statement, which, in addition to indicating the materials employed, furnishes the names of the observers and compilers of the several Tables, also the date of observation, and, where necessary, of publication also. We have also adhered to chronological order as much as possible. Ulpian and Graunt are excluded from this Table for reasons already stated.

1. A Record of the Births and Burials of the City of *Breslau*, in Silesia, from 1687 to 1691.—Dr. Newmann, Dr. Halley.—*First Life Table.*
2. The same materials, re-arranged by Thomas Simpson, about 1742.
3. The Mortality Bills of *London*, from 1728 to 1737.—Thomas Simpson and Dodson.
4. The same materials for 1759 to 1768.—Dr. Price.
5. Lists of the Tontine Schemes in *France*, and the Necrologies of Religious Houses.—Dr. Parcieux, 1746.
6. The Register of the Assignable Annuities in *Holland* for 125 years before 1748—William Kersseboom.
7. The Mortality of *Northampton* for forty-six years prior to 1780.—Dr. Price, *Northampton Table.*
8. The Mortality of *Chester* for ten years, from 1772 to 1781.—Dr. Haygarth—Dr. Price.
9. Seven Enumerations of the entire Population of *Sweden*, from 1755 to 1776.—Dr. Wargentin—Dr. Price.—*First "National" Life Table.*
10. The recorded deaths in *Stockholm* for nine years—1755 to 1763.—Dr. Price.
11. The Mortality of *Norwich* for thirty years prior to 1769.—Dr. Price.
12. The Mortality of *Holycross*, Salop, for thirty years prior to 1780. Rev. Mr. Gorsuch—Dr. Price.
13. The Mortality of *Warrington* for nine years.—Dr. Aikin, Dr. Price, 1781.
14. The Mortality of *Vienna*, *Berlin*, and *Brandenburgh*, for long periods before 1766.—Susmilch, Dr. Price.
15. Several Enumerations of the *Canton de Vaud*, Switzerland.—Muret, Dr. Price.
16. The Mortality of *Carlisle* for eight years prior to 1787.—Dr. Heysham, Mr. Joshua Milne - *Carlisle Table.*
17. The Mortality experienced by the *Equitable* Society—first by Griffith Davies, and subsequently revised by Mr. Morgan, 1834.
18. The Mortality experienced by the *Amicable Society* for about seventy years prior to 1831.—Mr. Galloway
19. The Recorded Mortality of *Government Annuitants*, and Tontine Nominees in England and Ireland. - Finlaison, *Government Table*, 1829
20. The Recorded *Experience of seventeen Life Offices*, embracing assured lives to the number of 83,905. Committee of Actuaries—Jenkin Jones—*Experience Table.*
21. The *English Life Table* (No. 1) deduced from the numbers of living at different ages at the Census of 1811, and the deaths of the corresponding ages in the same year.—Dr. Farr.
22. The *English Life Table* (No. 2) based on the Census of 1841, but the observations on deaths extending over a period of seven years; viz., from 1838 to 1844.—Dr. Farr,
23. The Experience of the *Economic* Life Office, based upon 9,335 lives.—Downes, 1857.
24. The Experience of the *Mutual* Life Insurance Company of New York over a period of fifteen years.—Sheppard Homans.
25. The Experience of the *Clerical, Medical, and General* Life Office over a period of twenty-four and a half years.
26. The Experience of the *Eagle* Life Office over a period of forty-four years, embracing 7,419 lives.—Charles Jellico.
27. The Experience of the *Scottish Amicable* Life Office extending over a period of thirty-four years, and comprising 10,255 lives.—William Spens, 1861.
28. The *English Life Table* (No. 3), "from the returns of two censuses [1841 and 1851], and 6,470,720 deaths registered in seventeen years."—Dr. Farr, 1864.
29. The Experience of the *Royal* Insurance Company over a period of twenty years.—*Percy M. Dove, 1865.*

We have chiefly confined this list to English compilers, or to such Tables as are specially alluded to in various parts of this work. We have certainly included all the observations from which anything like correct mortality Tables of English life could be drawn. De Moivre, indeed, constructed a Table from the mortality of Breslau, which led to the hypothesis that of 86 persons born, one dies every year, until all are extinct. The Northampton Table, to some extent, confirmed this; but all subsequent Tables have shewn different results. In addition to Deparcieux's French Table, two others have been prepared in that country, by M. Duvillard and M. Demonferrands, which will be noticed as we proceed. Up to a recent period no Life Table had been constructed for Prussia or Austria, although the data exists. The census of Prussia is taken every three years, but in such a manner as to present difficulties in constructing a proper Table. The same with Austria. Registers of deaths are kept by the clergy of the Russian empire, but no Life Table has been formed. In the United States of America the census is taken regularly every ten years, and the ages are properly distinguished, but abstracts only have been published for New York, Philadelphia, Boston, and some of the more advanced towns, "where property has accumulated and life is watched over with more care or facility than in the back settlements—scantily peopled with a fluctuating population."*

Before proceeding to notice more in detail the principal Tables referred to in the foregoing list, it may be well to give, in a tabular form, a comparison of their results, as shewn in the "expectation of life" they severally give, at the ages placed in the margin of the Table. This course will facilitate reference. Here is the Table:—

	Northampton.		Carlisle.		Equitable Society Experience		Governmt. Annuitants Mixed Male and Female		Experience of Seventeen Offices.		Dr. Farr's English Life Table, No. 2.		Deparcieux French Table.		
Age.	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Yrs.	Ms.	Age.
10	39	9	48	10	48	10	—	—	48	4	47	6	46	10	10
15	36	6	45	—	44	10	—	.	45	—	43	5	43	6	15
20	33	5	41	6	41	8	41	2	41	6	40	—	40	8	20
25	30	10	37	10	38	1	38	4	37	11	36	8	37	2	25
30	28	3	34	4	34	4	35	5	34	5	33	2	34	1	30
35	25	8	31	...	30	11	32	3	30	11	29	10	30	11	35
40	23	1	27	7	27	5	29	1	27	3	26	6	27	6	40
45	20	6	24	6	23	11	25	10	23	9	23	2	23	11	45
50	18	—	21	1	20	4	22	4	20	2	19	11	20	5	50
55	15	7	17	7	17	—	19	—	16	11	16	8	17	3	55
60	13	2	14	4	13	11	15	11	13	10	13	7	14	3	60
65	10	11	11	9	19	4	.	—	11	—	10	11	11	3	65
70	8	7	9	2	9	11	—	—	8	7	8	7	8	8	70
75	6	6	7	—	7	6	—	—	6	6	6	7	6	6	75
80	4	9	5	6	5	5	—	—	4	10	5	—	4	8	80
85	3	4	4	1	8	9	—	—	3	4	8	9	—	—	85

Speaking of the results generally, it will be remarked, that as the ages advance the expectancy more nearly corresponds: reminding us of the truthfulness of a remark of Dr. Southwood Smith, already quoted. There is, however, one age early in the Table—age 20—which presents a uniformity of result equalled at scarcely any other age. Throughout the whole Table—looking, as we shall have to do at the varied circumstances under which these results were obtained—the uniformity must strike the reader as little short of astounding: and he need not be again reminded by us that something more than CHANCE must regulate human existence.

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* Dr. Farr. Fifth Annual Report of Registrar-General.

NORTHAMPTON TABLE.

The first Mortality Table known to have been used for the purpose of determining the rate of premium to be paid for Life Assurance is that known as Dr. Price's *Northampton Table,* — the occasion, as we have already seen, being the establishment of the *Equitable* Office in 1762. The adoption of this Table by the promoters of the *Equitable* Society does not appear to have been altogether at the instance of Dr. Price himself, for we are told by Dr. Farr that "he recommended in the first instance his *Chester* Table, which is less erroneous than the Northampton Table, but the *Directors of the Equitable judged it less safe.*" It may be assumed, therefore, that the Chester Table shewed a more favourable mortality, and therefore indicated a less rate of premium. Dr. Price also constructed a correct Life Table from the population and deaths in Sweden, "which," says Dr. Farr, "was the first *National Life Table* ever made, and *redounds much more to Dr. Price's fame than the Northampton Table.*" Besides, it was constructed later than the Northampton Table, and most likely later than the Chester Table; and therefore had the advantage of increased experience. We have already explained the cause which led to the principal error in the Northampton Table; and it is one which would not be likely to affect his other Tables. The Swedish Table, moreover, appears to have been constructed by a comparison of the deaths with the numbers and ages of the entire population, and we have already quoted the opinion of Dr. Price and others in support of this method of construction.

On turning to the fourth edition of Dr. Price's work on Reversionary Payments and Annuities, we find him remarking, in the preface, "With respect to Tables, in particular, deduced from the Swedish observations, I cannot hesitate to pronounce that they *exceed in correctness everything of this kind which has hitherto been offered to the public;* and that nothing is wanting to make our knowledge in this instance complete but similar observations in other kingdoms. By these Tables, I have been enabled to state minutely the different rates of mortality of all ages among males and females, and to form Tables of the value of single and joint lives for each sex, as well as for both sexes collectively." This was written, too, after he had remedied some of the more prominent defects in the Northampton Table.

In the seventh edition of the same work—published by Mr. Morgan after the death of Dr. Price—we find the following note, reprinted from some former edition, in which Dr. Price, speaking of the Table he had deduced from the mortality of Holy-Cross, near Shrewsbury, says, "In November, 1781, Mr. Gorsuch was so kind as to favour me with a continuation of his observations to 1780, which makes them complete for thirty years. An abstract of them and a Table of the decrements of life deduced from them, *which I reckon one of the most correct that has ever been published,* will be found in the collection of Tables in this volume." Thereby, as we think, further shewing his own distrust in the Northampton Table.

Nearly all subsequent writers and compilers have referred to the errors of the Northampton Table. Professor de Morgan says of the Table, "to a certain extent the young are made to pay for the old —that is to say, the person who assures early in life—*the more prudent of the two*—is made to pay a part of the premium of one who does not begin till he is old." Dr. Farr speaks in stronger terms: "Great injustice has been done by the use of this Northampton Table, which in *mutual* Offices makes one member pay 40, 30, 25, 20, 10 per cent. more than the premium which is required to secure a policy of the same value, and *distributes the surplus thus acquired unequally.* The old Offices which have used the Northampton Table have a great difficulty in setting themselves right. By its use (he continues) the *proprietary* Offices have exacted enormous and unequal premiums from the portions of the community who happened to be ill-versed and ill-instructed in the intricate science of Life Assurance." In 1827 a Committee of the House of Commons was appointed to investigate the accuracy or otherwise of this Table, more particularly, we believe, in relation to the Annuity question before referred to, and the loss which was entailed on the nation by the continued use of this Table; and they thus reported: "The evidence appears to your Committee to be *strong and decisive in favor of the use of Tables which give an expectation of life higher than the Northampton.* IN TRUTH THERE IS NOT EVEN *a prima facia* CASE IN ITS FAVOR."

Dr. Farr again and again recurs to the defects of this Table:—

> "A false Life Table can be defended by the same arguments as a depreciated currency; and the substitution of a correct Table causes the same kind of disturbance in the value of the shares of members, as the re-coinage of clipped money, or a return from a depreciated paper to a metallic currency, introduces into the value of commodities and securities. The Northampton Table has still silent adherents, but few open defenders: and some of the old Offices have, greatly to their credit, since the error in that Table has been placed beyond doubt, abandoned its use."

Mr. Neison, in the preface to the third edition of his valuable work, *Contributions to Vital Statistics*, says:—

> "It is very curious, if not a mortifying circumstance, to discover, at this advanced stage of our progress, that the gigantic monied interests of our greatest Companies have long relied almost exclusively on a Table which has been falsely constructed, and which in fact does not represent the rate of mortality, even in the locality from which the data have been collected, nor, as will hereafter appear, the rate of Mortality in the country generally, nor among the assured portion of the community."

The Legacy Duties in 36 Geo. III., c. 52, were estimated from this Table.

The following Table furnishes a comparison of the Mortality expected under three other Tables than the Northampton. Out of 1,000 persons born at the same time, there will be living at each period of 5 years the numbers named in each column:—

Age.	Breslau. Dr. Halley.	Northampton. Dr. Price.	Carlisle. Dr. Heysham.	Sweden. Dr. Wargentin.
0	1000	1000	1000	1000
5	563	536	680	656
10	508	487	646	611
15	483	465	630	590
20	461	441	609	570
25	436	409	588	546
30	409	376	564	549
35	377	344	536	488
40	342	312	507	459
45	307	279	473	422
50	267	245	440	365
55	224	210	407	340
60	186	175	364	293
65	147	140	302	238

CARLISLE TABLE.

Professor de Morgan has pronounced this to be "the best existing Table of healthy life in England." This, however, was before Dr. Farr had constructed the English Life Tables. Dr. Milne, its compiler, was of opinion that, although it had been constructed from the mortality of two parishes only, the results it exhibited would probably vary very little "from the general law that obtains throughout the kingdom, taking towns and country together, *if we except the children under five years of age, or at most under ten.*"* And this was certainly a very necessary exception, as may be seen by referring back to the Table. In other respects it has undoubtedly been the best guide to "healthy life" in England, from the date of its publication at least up to the completion of Dr. Farr's Tables. It gave the expectation of life for males of 30, in Carlisle, at 34¼ years. The average duration throughout England at the same age is 33¾ years; and in Sweden and Finland 32¾. There is no doubt that at the time this Table was *first* constructed, it did show results too favorable for the whole country at all ages; but the health of the country was at that time rapidly improving, and therefore it may be said that the ultimate accuracy of the Table arose rather from accident than design. This, however, is not material; the fact is patent, that all properly conducted Offices, based upon this Table, have met their engagements, and for the most part had very large surpluses to spare.

Notwithstanding its generally admitted accuracy, this Table has, however, met with some very violent assailants. Mr. Higham, the Actuary of the *Royal Exchange* Office, says, "The Carlisle Table, through its whole extent, is of no authority, and at the extreme ages is useless and absurd. The numbers (he continues) on which it is founded, are so small, that it owes its popularity entirely to the accident that it happens to agree pretty nearly with other observations."† The chief objection other writers have urged against it is, its "faulty graduation;" and it must be admitted that there are grounds for this complaint. This is apparent not only in the younger ages before referred to, but also in the advanced ages: thus at age 91 the *expectation* is 3 years and 3 months; at 95 it is 3 years and 7 months. Dr. Milne, however, says "it is not to be understood from hence that a man at the age of 95 is likely to live longer than the *same individual* was at 91. But that out of the persons who attain to 91, those only survive to 95, in whom all the powers of life are so exactly balanced, that they are calculated to live several years longer than the common average of those who survive 91 ; and if they could be selected from the rest at that earlier age, the expectation of life for those select lives would certainly be higher at 91 than at 95."*

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* Milne on Annuities, p 451. † Assurance Magazine vol. 1, p. 188.

The difference between the "Expectation" under the Northampton and Carlisle Tables is very remarkable; and it may be seen to its fullest extent by comparing the numbers out of 1.000 children born the same year, which each Table expects to be living at the end of each five years through life:—

Out of 1,000 born.	By Northampton Table.	By Carlisle Table.	Difference.
At end of 5 years	536	680	144
10 "	487	646	159
15 "	465	630	165
20 "	441	609	168
25 "	409	588	179
30 "	376	564	188
35 "	341	536	192
40 "	312	508	198
45 "	279	473	194
50 "	245	440	195
55 "	210	407	197
60 "	175	364	189
65 "	140	302	162
70 "	106	240	134
75 "	71	168	97
80 "	40	95	55

The difference amounts on an average to 33 per cent., or *one-third*, so that if a given sum were made payable to each of the 1,000 lives included in the example, *one-third less money* would be required for the purpose under one Table than the other. This not only accounts for the difference between the expectation (and therefore the difference in the rates of premium), but also for the enormous funds realized by some of the old Offices using the Northampton Table. The best age—that is the age which shews the greatest expectation of life in the Carlisle Table is seven years. In the Northampton Table it is at eight years.

The Carlisle Table gives the expectation at birth at 38¾ (38·72) years. Therefore, Dr. Milne observed, in a stationary population subject to the same law of mortality, and not affected by migration, one person would die annually out of 38·72 (38¾), or one hundred out of 3,872.

The Life Offices in the United States are almost without an exception, we believe, based upon the Carlisle 4 per cent. Table, with an addition of about 33⅓ per cent. Therefore, so far as the net premiums go, the Offices nearly all have the same basis.

Mr. Thomas Rowe Edmonds, the Actuary of the *Legal and*

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* Milne on Annuities, p. 554.

General Office, whose authority on Mortality Tables is entitled to weight, has publicly stated his belief that this Table is 20 per cent. too favorable *for lives that have been long assured*, but that it fairly represents the mortality amongst lives assured less than ten years. He therefore gives a wider range to the benefit of selection than many Actuaries. We are not aware that this view is supported by others of the profession.

EQUITABLE SOCIETY EXPERIENCE TABLE.

The chief interest in this Table arises from the fact of its being the first Mortality Table constructed upon the records of *assured life*, as distinguished from the lives of annuitants, Tontine, or otherwise. This Table was first prepared by Mr. Griffith Davies, from the decrements of life amongst the members of the *Equitable* Society. Mr. Morgan, the actuary of that Society, afterwards re-computed it, and adopted a differeht system of graduation to that adopted by Mr. Davies, after which it was found to differ in no case more than about eleven months from the Carlisle Table, while in many ages the results were identical. *Vide* Example, p. 166. The example thus set by the *Equitable* was soon followed by the *Amicable*, and since by the *Scottish Widows' Fund*, the *Eagle*, the *Standard*, and one or two other Offices; although the results, with the exception of the *Amicable* and *Eagle*, have not, we believe, been extended into Life Tables. The experience of the *Equitable* Society was found to be much more favourable than that of the *Amicable*. Professor de Morgan accounts for the circumstance by stating that the former was much more careful in the selection of its lives than the latter during the early period of its existence, adding, however, "The later years of the *Amicable* Society do not exhibit any very decided difference of the sort."

The Mortality experience by the *Economic* Society—one among the best conducted Life Offices in this country—has recently been published, and shews results more favorable to assured life than either of these Tables.

Mr. Edmonds has remarked, with respect to these Tables,

> "The observations of the *Equitable* show that there is apparently some connexion between the mortality of assured lives and the mortality of the general population, for the Table deduced from the *Equitable* and *Amicable* experience combined, including the five years of membership, represents very nearly the observed mortality of the total male population of England in seven years, from 1838 to 1844, inclusive."

GOVERNMENT TABLES.

These Tables were based upon the recorded ages and deaths of 22,000 Government annuitants and Tontine nominees in England and Ireland; and Mr. Finlaison, their compiler, was so confident of their accuracy that he expressed his belief, before a Committee of the House of Commons, that they would supersede all other Tables then in use. He said they "had been *eight years* in preparation with all the means of perfecting them which the Government could supply, and to which no private individual had access." This prediction, however, has not been realized. The fault of these Tables rests almost entirely on their being based upon too limited a number of observations.

Mr. Finlaison was the first compiler who deduced *from English data* separate values for male and female lives. At the age of 20 he found the female expectation of life no less than 5½ years greater than the male expectation. In the *Experience Tables*, calculated a few years afterwards, the difference was *four years the other way!* Both these Tables were based upon experience. But the Government Tables gave the experience of *annuitants*—the Experience Table the experience of *assurers!* Here, at least, is "food for reflection." Dr. Farr attributes these results to errors arising from the limited number of observations taken in each case; adding, "For it is inconceivable that female lives should be so much *longer* or *shorter* than the lives of males, as these returns indicate." He also arrives at the conclusion, from these facts, that "*selection*, under the existing tests, is more effective in the case of *females* than in the case of males;" but that it is *not safe at present to insure females at lower rates than males.*"

Mr. Sang, a Scotch writer and actuary, drew attention to the fact that the *male* lives selected from the Government annuitants were *much worse than the average male population of the kingdom*, particularly at ages under 25. Looking to the cause of this, he says, it "may, no doubt, be attributed to the want of regular labour, and to the pampered style of living of the richer classes." "The constitutional effect of early irregularities, (he continues), seems to influence the remainder of life; for after age 30, when the mode of living may be supposed to have become sobered, the line still continues, though at less distance, below that for the average population. Between ages twenty and thirty, a great improvement may be remarked. The expectation of life by the females of the wealthier classes is, on the other hand, decidedly, though not much, greater than by the mass of the female population: a circumstance that seems to indicate that *women enjoy prosperity much more moderately than men do, and that they use the advantages of their situation in a proper way for the improvement of their health, and consequent increase of their happiness.*" Taking both sexes into account, Mr. Sang considers, "that one may feel warranted in stating that if health and longevity be an index of happiness, a greater share of that so much desired good is enjoyed by the working population (the middle class generally) than by those who have been more favoured with the smiles of fortune."

Mr. Finlaison, during his investigations, observed a very extraordinary prolongation of human life—"so great that the duration of existence now, as compared with what it was a century ago, is as 4 to 3 in round numbers;"—thus fully confirming the statements of Mr. Griffith Davies and others in the same direction.

"EXPERIENCE" TABLE.

This Table was based on the recorded experience of *seventeen* Life Offices, including the *Equitable* and the *Amicable*, the *Alliance*, *British Commercial*, *Crown*, *Economic*, *Guardian*, *Imperial*, *Law Life*, *London* Life, *Norwich Union*, *Promoter*, *Scottish Widows' Fund*, *Sun*, *Universal*, and the *University* Offices. The total number of lives observed upon was 83,905. The data was collected under the superintendence of a Committee of Actuaries, which availed itself of the most extensive and special experience that could be obtained to determine the law of mortality which prevails among assured lives. The results, however, were compiled and published by Mr. Jenkin Jones. The Table is beautifully graduated—it had the advantage also of both town and country experience—and but for the publication of Dr. Farr's Tables, which have had the advantage of far more extended data, would probably have been the most popular Table of the day. It may be noted as strange, that these Tables have never been made public; a small number only having been printed for private circulation.

Dr. Farr urges an objection to the use of this Table for the purpose of determining the premiums, or valuing the assets and liabilities of Assurance Offices, on the ground that as the average term over which its observations extends is only 8½ years, it considerably under-states the mortality, *which it is probable will prevail in Insurance Societies when they have attained maturity;* also adding that the mortality at the advanced and most important ages, by the *Carlisle Table*, is lower than that which has already been experienced among assured lives, and is indicated by this Table. He adds—

> "In the course of a century, or of half a century, from the observations on a great number of assured lives, a Table can be constructed, which will be a most valuable contribution to statistical science, and enable competent men to decide whether a Table of the mortality prevailing among the insured lives during the 19th century is more likely to express the mortality of the persons who insure their lives in the 20th century, than a Life Table deduced from the living, and from the deaths in the population of that day.

In the computation of this Table several curious and unexpected results were elicited. First, it shewed that the mortality from "*town*" life, taking all ages together, was *more favourable* than the mortality from "country" life. Secondly, that the mortality amongst *assured females* was greater than amongst *assured males;* and thirdly, that the mortality amongst *Irish* lives was greater than amongst either town or country assurances in England. The following Table, furnished by Mr. Brown, shews the actual differences in the mean duration of each class of lives:—

:	Males.		Females.		Town.		Country.		Irish.		Northampton Table.	
Age.	Years.	Mns.	Years.	Mns.	Years	Mns.	Years.	Mns.	Years.	Mns.	Yrs.	Mns.
20	39	10	35	10	41	2	40	4	34	11	33	5
30	33	2	31	9	34	10	34	2	29	8	28	8
40	26	1	26	4	27	6	27	4	23	4	23	1
50	19	5	20	—	20	7	20	6	17	9	17	11
60	13	5	13	9	14	8	14	—	12	8	13	2
70	8	4	7	11	8	7	8	6	7	11	8	7

The figures relating to the Irish lives embrace both male and female, and they shew a less duration of life than amongst assured females in England. Even the Irish lives exhibit a mortality slightly more favourable than that of the Northampton Table. It is very difficult to account for the difference in favour of town over country life. The larger number of assurers residing in towns, it is probable that the number of country lives observed upon might not have been sufficient to secure correct results. The difference is but very slight, still it is on the side least expected. That *female assured life is less favourable* than *male assured life* has been ascertained from several sources;[*] this Table gives the following results:—At age 20, male expectation, 39 years and 9 months (39·8); female expectation, 35 years and 10 months (35·9); being, as we have already shewn, almost exactly the reverse of the Government Tables.

According to the English Table, the expectation at 20 is 39 years and 11 months for males, and 40 years and 10 months for females: difference 11 months in favor of females.

Mr. Finlaison, in his evidence before the Select Committee on Assurance Associations, said, in reference to this Table, "I myself should count for six; I am assured in different Offices six times. Then, if policies are counted, and not individual lives, which is the case in the Actuaries' (Experience) Table, while I live I count for six, and when I die I shall count for six deaths." Adding, "*A Table so constructed cannot be depended upon for Life Insurance purposes*"[†] This statement, from so high an authority, was calculated to arouse considerable attention in the Assurance world, and it did so. We happen to know that Mr. Downes, the Actuary of the *Economic* Office, in his recent investigations into the mortality experienced by the Society, directed particular attention to this point; and although we are not at liberty to state the plan on which he proceeded, and can only plead our desire for the furtherance of scientific truth, for here referring to the matter at all, we may state that the result of Mr. Downes' investigations shows Mr. Finlaison's objections to have little or no foundation whatever.

THE "ENGLISH" LIFE TABLES.

The English Life Table, or as it would be better called, the "National" Life Table, was founded originally upon the census returns of 1841, and (in the first instance) the deaths of that year. Its compiler, Dr. Farr, is, or *ought to be*, well known to every person interested, however remotely, in the progress of Life Assurance or sanitary reform. The able "letters," or rather treatises, which from time to time emanate from his pen, grace and enliven the otherwise tame and cumbrous reports of the Register-General. Perhaps there is no man living who has done more to extend the blessings we all most prize—namely, *health* and *long life*. The unmistakeable clearness of his facts, and the cogency of his reasoning, have forced conviction throughout the length and breadth of the land, and the result is seen in the establishment of Boards of Health—the efficient drainage of towns, and supply of pure water—the prohibition of intramural burials, and the providing of public cemeteries—to say nothing of "people's" parks, and model lodging houses, which are also manifestations of the same spirit of improvement. Future generations will not fail to hold in veneration the memory of one whose almost individual labours—aided and promulgated by the public press—have produced such extended good. It would be no more than justice if the present generation made some more substantial acknowledgment for such service.

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[*] Samuel Brown. [†] Vide Answer No. 701

Believing that nothing short of a Table, based upon the returns of the entire kingdom, would satisfy the increasing demands of Assurance Offices—extending as they are their operations to every town and hamlet in the kingdom, and becoming thereby affected by all the influences of occupation and locality—Dr. Farr, at enormous labour, placed such a Table at our command; viz., the English Life Table No. 1, published in the same volume with the fifth report of the Registrar-General: the principal observations thereon being afterwards given with the sixth annual report.

But after this labour had been incurred, Dr. Farr was led to believe that the records of *one year's deaths* might be too meagre to furnish results sufficiently unchallengable for the purpose in view. He, therefore, recommenced his labours, and although adhering to the census report of 1841 as his basis of comparison, he took the deaths of three *previous*, and of three *subsequent* years—making with those of 1841 a period of seven years of observations—and from this extended data deduced a new series of results known as *Life Table No.* 2, published with the 12th annual report of the Registrar-General.

Again, more recently, Dr. Farr has been at work on a still larger area of observations, and has (1864) produced the *English Life Table*, No. 3. While the No. 1 Table was based upon the recorded ages of 15,914,148 living persons, and No. 2 Table on 2,436, 648 deaths. No. 3 Table is deduced from the returns of the two censuses of 1841 and 1851, embracing some fifty millions of living, and *from six millions, four hundred and seventy thousand, seven hundred and twenty deaths* registered in *seventeen years*. Thus, this last Table, in Dr. Farr's own words, "is not deduced from the population or the deaths alone, *but from the ratio the one bears to the other at different ages*." It is therefore as accurate as extended observations, profound research, and unwearied labour and consideration can make it. Nor will the interest in it be lessened from the fact that the elaboration of the above results have been *calculated and printed* by Scheutz's machine, purchased by the Government for the Registrar General several years since.

The difference between the several Tables is slight, but still sufficient to justify Dr. Farr in his belief that a more extended period than one year's deaths should be observed upon. The observations were taken on the plan recommended by Professor de Morgan and Mr. Griffith Davies, and Dr. Farr has the proud satisfaction of knowing that he has produced a Life Table which most fully and completely represents the *decrement* and *expectation* of life in this kingdom at the present time, in the absence of extraordinary epidemics.

Mr. E. J. Farren stated before the Select Committee on Assurance Associations (1853), "for mixed lives I consider there are none equal to Mr. Farr's Tables." And again, "I consider he is the only man who has *paid attention to the* science of the subject for many years."

The actual difference in decrement may be seen by the following example. The variation is confined chiefly to the middle ages of life—more particularly those from 35 to 50.

Out of 1,000 *males* born at the same time there will be living at the commencement of each period of five years from birth the numbers stated opposite to the ages, and of these the numbers stated in the succeeding column in each case will die during the year:—

Age of Birthday.	TABLE No. I.		TABLE No. II.		TABLE No. III.	
	To 1000 children born, the number of males living at each period of 5 years.	Males dying in the year following each Birthday.	To 1000 children born, the number of males living at each period of 5 years.	Males dying in the year following each Birthday.	To 1000 children born, the number of males living at each period of 5 years.	Males dying in the year following each Birthday.
0	512	81	513	82	511	83
5	373	56	372	5	370	5
10	355	1	355	2	353	2
15	345	2	346	2	344	2
20	333	2	335	3	333	3
25	319	2	321	3	319	3
30	304	3	307	3	304	3
35	288	3	291	3	286	3
40	271	3	275	3	272	4
45	253	3	257	4	258	4
50	233	3	237	4	233	4
55	213	4	215	5	209	5
60	188	5	189	6	182	6
65	155	7	156	7	150	7
70	118	7	118	8	114	8
75	78	7	79	8	75	7
80	43	6	44	6	41	6
85	17	3	18	4	16	3
90	4	1	5	1	4	1

On the whole, therefore, Table No. 3 shews results slightly *less favourable to human life* than No. 1 or No. 2.

The difference is more apparent in noting the "expectation" under the respective Tables:—

Ages.	TABLE No. I. Expectation.		TABLE No. II. Expectation.		TABLE No. III. Expectation.			
					Males.		Females.	
	Yrs.	Mths.	Yrs.	Mths.	Yrs.	Mths.	Yrs.	Mths.
10	47	5	47	6	47	—	47	8
15	43	8	43	5	43	2	43	11
20	40	4	40	—	39	6	40	3
25	37	—	36	8	36	2	37	—
30	33	8	33	2	32	9	33	10
35	30	5	29	10	29	5	30	7
40	27	2	26	6	26	—	27	4
45	23	10	23	2	22	9	24	1
50	20	7	19	11	19	6	20	9
55	17	2	16	8	16	5	17	5
60	14	—	13	7	13	6	14	4
65	11	2	10	11	10	10	11	6
70	8	9	8	7	8	5	9	—
75	6	9	6	7	6	6	7	—
80	5	1	5	—	5	—	5	3
85	3	9	3	9	3	9	4	—

Dr. Farr found the annual mortality of the English population during five of the years under observation, viz., from 1838 to 1842, to be $2\frac{1}{5}$ (2·209) per cent., or nearly one in 45. During the same period the mortality in France was 2·397, or one death in 42 living. In Prussia, during the years 1838-41, 2·658, or one in 38 living. In

Austria 2·995, or one in 33 living; and in Russia 3·590, or one in 28 of the living.* He further found that of 100,000 children born alive in England, 51,274 are boys, and 48,726 girls. Of these 33,060 males, and 32,464 females, attain the age of 21, and 11,824 males, and 12,708 females, live to 70.†

The English Life Table shows that *half a generation of men of all ages passes away in thirty years*, and *that three in every four of their number die in half a century*. Also that the "mean age" of the people is 32 years, and that the "mean time" they would live if the population were stationary is 32 years.

DEPARCIEUX'S (FRENCH) TABLE.

We have appended to the Table of expectations at page 166, for the purposes of comparison, the results of Deparcieux's French Table. It will be observed that it gives an expectation greater than the Northampton Table at all except the extreme ages. On the other hand, it is *below* the Carlisle Table at all ages, and the same in respect to the Government Table. It corresponds very nearly with the *Equitable* Experience Table, and at ages above 20 with the "Experience" Table; but it is at all the ages over 10, *above* the English Life Table. This result would be very remarkable, but for the fact that the Table was founded upon the deaths of French annuitants, monks, and nuns, and not upon the general population of France. Indeed, France has no *National* Life Table, nor has she ever published the data upon which one could be founded. *Duvillard's* Table, which is chiefly used by the French Insurance Offices, was founded on 100,542 deaths at different ages in different parts of France, amongst a population of 2,290,672. It gives the mean duration of life in France at 28 years and 9 months (28·76). ‡

It was Deparcieux who first demonstrated, what had previously to his investigations only been surmised or expected, namely, that the expectation of *female life was greater* at all ages than the expectation of male life. We have not his Tables at hand, and therefore cannot give any example of his results. Kersseboom, if we remember rightly, observed the same; but (as we have already stated) Mr. Finlaison was the first to give separate values for male and female life on English data. The following is an abstract of his Tables:—

Age.	Male Expectation.				Female Expectation.				Difference.			
20	38	years and	5	months.	44	years.			5	years and	7	months.
25	35	„	11	„	40	years and	10	months.	4	„	11	„
30	33	„	2	„	37	„	7	„	4	„	5	„
35	30	,	2	„	34	„	4	„	4	„	2	„
40	27	„	—	„	31	„	1	„	4	„	1	„
45	23	„	9	„	27	„	10	„	4	„	1	„
50	20	„	4	„	24	„	4	„	4	„	—	„
55	17	„	2	„	20	„	10	„	3	„	8	„
60	14	„	5	„	17	„	4	„	2	„	11	„

The difference in favor of "female expectation" is here seen to be the greatest at the age of 20. At 25 it becomes nearly 12 months less, by 30 it has decreased still further by 6 months. It remains steady at about 4 years from 35 to 50, and then gradually declines.

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* Sixth Report. † Ibid. ‡ Dr. Farr—Fifth Report.

It must be remembered, in looking at the above comparison, that the lives observed upon were not selected from the general population, but were those of annuitants. We have also seen that the *male* expectation under these Tables was, from causes already referred to, below that of the general population of the kingdom. On the other hand the female expectation was above that of the general population or of any other Life Table. Indeed, under the "Experience" Table, based upon assured life, results almost the very opposite of the above were produced, so that we must look elsewhere for more reliable data.

The English Life Table (No. 3) which far more nearly than any other existing Table, represents the present mortality of the kingdom, gives the following results at ages corresponding to the above:—

Age.	Male Expectation.	Female Expectation.	Difference.
20	39 years 6 months.	40 years 3 months.	— years 9 months.
25	36 „ 2 „	37 „ — „	— „ 10 „
30	32 „ 9 „	33 „ 10 „	1 „ 1 „
35	29 „ 5 „	30 „ 7 „	1 „ 2 „
40	26 „ — „	27 „ 4 „	1 „ 4 „
45	22 „ 9 „	24 „ 1 „	1 „ 4 „
50	19 „ 6 „	20 „ 9 „	1 „ 3 „
55	16 „ 5 „	17 „ 5 „	1 „ — „
60	13 „ 6 „	14 „ 4 „	— „ 10 „
65	10 „ 10 „	11 „ 6 „	— „ 8 „
70	8 „ 5 „	9 „ — „	— „ 7 „
75	6 „ 6 „	7 „ — „	— „ 6 „
80	5 „ — „	5 „ 3 „	— „ 3 „

We have brought the comparison down to four later ages, during which female life still retains the advantage, and it does so through life. At 95 the difference is only *one month*. These results are very different from the former ones, although they confirm the point under notice; and it is fortunate for assurance offices that this more correct data has been produced. The causes which contribute to render female better than male life have been reviewed in our chapter on population. At birth the English Life gives females an advantage of two years: the expectation for males being 40 years and 2 months; for females 42 years and 2 months; on an average of the whole period of life the difference is only 1 year and 2 months.

A writer in Tait's Magazine, for 1848, gave, in illustration of this point, the following Table of the decrement of male and female life at the several ages from birth. We do not know from what source the statistics are derived.

End of Year.	Male.	Female.	Difference.	End of Year.	Male.	Female.	Difference.
1	981	981	0	50	561	628	62
2	963	967	4	60	440	539	99
4	937	945	8	70	288	412	124
6	919	926	7	80	125	210	85
8	906	918	7	90	11	52	41
10	896	908	7	94	1	14	13
15	872	883	11	95	—	8	8
20	837	848	11	96	—	5	5
30	782	777	45	97	—	2	2
40	644	700	56	98	—	1	1

It is a curious feature connected with observations on *Irish* lives that the men appear to live longer than the women in the "rural" districts; and the women longer than the men in the "civic" districts. Frenchmen live longer after 20 than the women, if the expectations of life in the two sexes be equally correct, or incorrect, in M. Demonferrand's Tables. In England the lives of females exceed those of males by about a year—except at birth, when the difference is greater. In Surrey the females, from the age of one year and upwards, live little longer than the males; the difference is greater in the metropolis, where it amounts at some ages to two or three years. This may, perhaps, account for the differences in the expectations of life deduced from male and female annuitants. According to Mr. Finlaison's Tables, the lives of men are from five to six years shorter than those of women, a discrepancy which, in its extent, is entirely at variance with all other observations. If the majority of the annuitants before 1829 were inhabitants of London, and more than a due proportion of the women lived in the country, such a discordant result would, however, be produced.—*Vide* Fifth Annual Report of the Registrar-General.

Results equally unaccountable and perplexing have been deduced from other Life Tables, more particularly those of Kersseboom and Deparcieux. Dr. Milne, in his supplement to Dr. Heysham's observations on the mortality of Carlisle, says, in reference to these—"We have seen that fens and marshes increase the mortality considerably; and Holland, where there is more of the effluvia of mud and stagnant water than in any other part of Europe, was the residence of the annuitants, from the duration of whose lives (principally) M. Kersseboom constructed his Table of mortality; yet there are very few places where the probabilities and expectations of life have been observed to be so great as that Table represents them." And, he continues, "the influence of great and populous towns in abridging life is also well established, yet the nuns of Paris, and the nominees in the Tontines, from which M. Deparcieux constructed his Tables, most of whom resided in that city, certainly lived considerably longer than the bulk of the people in France. If all other circumstances except soil and climate, with their fruit productions, were the same in both countries, the inhabitants of France might well be expected to live longer than those of Sweden; but M. Duvillard's Table of mortality, as well as all the other observations that have been made on any considerable part of France, show, when compared with the Swedish Tables, that the mean duration of life is longer in Sweden than in France. Hence, he says, it appears that the law of mortality *depends more upon the circumstances and the habits of the people than upon the place of their residence.*" [*]

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[*] In the Fifth Report of the Registrar-General, Dr. Farr makes the following observation on the same subject:—"The mean duration of life in France, according to Duvillard's Table, is only 28·76 years. The duration of life is, I believe, longer in England than in any other country; but it is scarcely credible that the lives of Frenchmen should be 12 years shorter than the lives of Englishmen, and 10 years shorter than the lives of Swedes."

EXPERIENCE OF MUTUAL LIFE COMPANY OF NEW YORK.

The labours of Mr. Sheppard Homans presented, we believe, the first known results of the duration of life in the United States of America. There had been much scientific speculation upon the subject, and the general impression was that the wear and tear of life on that side of the Atlantic was much greater than in the old countries on the European side, and that consequently the mortality would be greater. A few English Companies had issued policies on lives on that side; but there was a decided prejudice against, or perhaps we should rather say fear of, the results of the business; and the numbers assured and the duration of the policies were not sufficient in these cases to afford a basis for observation. It was, therefore, with no small degree of interest that the results of the investigations of Mr. Homans were received in this country.

The observations were confined to *the lives assured in the Mutual Life Company* of New York, of which Mr. Homans is the actuary. They extend over several thousands of lives, assured during a period of fifteen years. Comparison can therefore only be made with English assured life; for at present there exists no general mortality table founded on the entire population of the United States, although we believe that Mr. Kennedy, of the United States Census office, is taking very elaborate observations, with a view to the preparation of such a Table. When we reflect upon the vast area over which such observations must extend, and the constant fluctuations, from immigration, change of residence, and the opening up of new territory, we can form some estimate of the Herculean labour which such a production will involve. In dealing with Mr. Homans' observations, it should be known that the *Mutual* is one of the very best conducted life offices in the States; its officers are men of the first intelligence in their several departments, and its business is of equal magnitude with any of the life offices in Great Britain. Mr. Homans was, we believe, United States astronomer before he took his present appointment. These facts will point to the following inferences—(1) That the lives have been very carefully selected, and that therefore the mortality results are more favourable than that of the general population, or than that of less prudently managed offices; and (2) that the investigation has been conducted with sufficient scientific skill and business aptitude to render its results reliable as far as they profess to go.

The mortality experience of that office is less favourable up to age 33 than that shown by the English "Experience" Table; and for all ages beyond 33 up to 70 more favourable. From 70 to 75 the results are identical. The most favourable period shown is that from 35 to 45. The President of the Society, Mr. F. S. Winston, thus sums up the results, "our own experience, though more favorable than the Actuaries' [experience] Table, or that of any other known, both in its pecuniary results and in its relative mortality, compares more nearly to the Actuaries' than to the Carlisle or Northampton Table."—Preface to report, p. iii.

The method adopted by Mr. Homans to distinguish the expected mortality of his office from that actually experienced, was at once so clear and simple that it was certain to be hereafter generally adopted for popular purposes.

The extent of country, and the varieties of climate, occupation, and habits of life on the North American continent, present features of difficulty which have to be provided for by the Life Offices doing business there. The usual classification of locality is as follows:—Class I. New England States, New York, Pennsylvania, New Jersey, Delaware, Maryland, and part of Virginia. Class II. Michigan, Winsconsin, Iowa, Illinois, Indiana, Ohio, Missouri, Kentucky, and part of Arkansas and Tennessee. Class III. Georgia, North and South Carolina. Class IV. Texas, Mississippi, Alabama, Florida, Louisiana. Class V. The Western Territories and California. Class VI. The Mississippi Valley, within ten miles of the Mississippi and Missouri rivers, north of 38 deg. lat. With an extra class (VII.) for risks in foreign countries, sea risks, and all not included in the other class. Mr. Homans' investigation embraced the results of most of these several classes.

While upon the subject of the mortality of assured life in the United States, we ought perhaps to say a few words upon the supervision to which the Assurance and Insurance Companies there are subjected. The people have recognised the responsibilities which are undertaken by these institutions, and are not disposed to leave the performance of those responsibilities to chance or accident. They have organised departments for the especial supervision of the Insurance institutions of each State. The companies are compelled to make periodical returns of all policies issued, of all premiums received and losses paid in respect of such policies, and of all available funds to meet outstanding liabilities under their policies. Copies of all their actuarial valuations, even down to the detailed value of each individual life policy, must be forwarded to the department, and this is no idle form; for the superintendents of the departments check each of the returns, and if they are not fully satisfied of the ability of the Company to perform all the obligations it has undertaken to its policy holders, *its operations are forthwith suspended.* This may appear at the first glance harsh, but it is most essentially just and practical. Assurance is a sacred trust, and the people there are wise enough so to regard it. Those who have had the advantage, as we have had, of becoming personally acquainted with the chiefs of the Insurance departments of the State of New York (the Hon. William Barnes, of Albany), and of the State of Massachusetts (the Hon. Elizur Wright, of Boston), know with what conscientious industry the duties, we ought to say the labours, of their office are performed; and their annual reports are now looked forward to with nearly as much interest on this side of the Atlantic as on their own. God speed them, and all those performing similar duties in the other States of the Union, in their good work.

As we have already stated, the Life Offices of the United States are at present almost invariably based upon the Carlisle 4 per cent. Table.

EXPERIENCE OF ROYAL INSURANCE COMPANY.

The most recent and, in many respects, the most remarkable experience of any individual office is that of the *Royal*, compiled and published first in 1860, and latterly in 1865, by its able and clear-minded actuary, Mr. Percy M. Dove. The curious anomaly has heretofore existed, that whereas the prudent and efficient management of the business of Life Assurance is a matter in which a very large number of persons are interested, the method of demonstrating such results have been so crude and technical that but a very small number of persons could be made to comprehend them. Now we hold that it is impossible to make any principle permanently popular unless it be capable of being generally understood. We believe Mr. Dove rendered some essential points in the practice of Life Assurance capable of being generally understood. His reasoning is simple,—whereas certain results were expected; but *this is what has happened*, and the picture is before your eyes: the elements of comparison side by side—the conclusion inevitable.

We know something of the difficulties of popularising Life Assurance. There is much in it that can never be popularised in the strictest sense; but the essential points can be, and have been in the Tables under review. These essential points are—(1) a sound basis, (2) able and economic management, (3) sufficient financial resources to meet all outstanding engagements. All these things can, indeed, be demonstrated in words and figures, and have hitherto been mainly so rendered. But the great majority of persons cannot gather a distinct idea of the point to be conveyed to the mind, by a mere comparison of figures. Even actuaries have found the advantage, not to say the necessity, of diagrams to illustrate certain points of comparison; but for the most part, and to the great majority of persons, the diagrams of ordinary use would be no improvement upon the words and figures, in a popular sense. But Mr. Dove introduces the additional element of *colour*, and so confirms the poetic sentiment—

> "Pictured morals charm the mind,
> And through the eye instruct the heart."

He makes the eye perform the work of comparison instead of the reasoning faculties.

We have been so much struck with the uses to which this class of diagram may be applied in illustrating the essential points of Life office management, that we have resolved to furnish our readers with a few special directions concerning these. The diagrams may be obtained gratis from the office of the Royal, or from our publishers. The scientific reader will gather from the figures surrounding the diagrams their more exact details.

General Explanation of Diagrams.—Every Life office is, or ought to be, based on a mortality Table, which will define what its mortality should be *expected to be* over a given number of lives of varying ages. The *yellow* in diagram No. 1 represents that expectation. We may, from its shape, call it a mountain. The size and shape will vary with the varying circumstances of each particular office; but every office must have its mountain of *expectation*. The *violet* represents the actual experience—the actual deaths. That may be regarded as another mountain standing immediately in front of the former one. Now if the violet mountain at any time should entirely hide the yellow mountain from sight, it would follow that the experience had been greater than the expectation, and the office would be in a worse position than it ought to be. If, indeed, it should happen (and such a coincidence would be indeed remarkable) that the two mountains were precisely of the same size, then just what was originally expected would have happened; but whenever the yellow mountain shows a margin over the violet one, its mortality *has been favourable to the extent of that margin*, making due allowance and abatement for the few projecting violet peaks, which owe their origin chiefly to the fluctuations incident to small or disproportionate numbers. The careful *selection of lives*, in the absence of extraordinary epidemics, determines the preponderance of yellow over violet, always assuming the mortality table upon which the office was founded to be equitably adapted to the class of lives intending to be assured.

In diagram No. 2 we have the pecuniary results shown, namely, how much money the office *expected to pay* for claims arising from deaths, and how much it *actually has paid*. The yellow mountain shows the expected payments, the violet mountain and its peaks the actual payments. The peaks are occasioned by the variations in the amounts of the policies, as well as in the number of deaths. Now, then, it is clear that if the violet mountain overtopped at all points the yellow one, the office would have paid away more money than it ought to have paid. If the mountains were precisely equal, no harm would have occurred. But all the yellow which is visible (less, violet peaks to be deducted) is just so much gold accumulated by the careful selection of lives, and sound management in other respects. What can be a simpler test? Mr. Dove frankly acknowledges his indebtedness to our friend Mr. Homans for the idea. Every agent of every office should thank Mr. Dove for popularising a test which may, and ought to be, applied to all Assurance Companies founded on sound principles. It would not follow that, because a Life office at any given period was *up the wrong mountain*, that it might not by prudence and care set itself right again. By a little addition to the diagram a third mountain might be added, of the total available resources of the Company. This *should* be the larger of the three.

With regard to the comparative results of the *Royal* Experience Table, it is more favourable at nearly all ages than the "Experience" Table of the seventeen offices, especially in all the younger ages, up to 42.

A very curious feature in connection with the *Royal* Experience is that the officers and agents of that Company, acting under the instructions of the actuary, have kept in view, and, as far as possible, recorded the mortality experience of the lives they have *from time to time declined.* The result justifies, in a very marked degree, the soundness of the discretion exercised, and is as unique in practice as are several other of the characteristic features of this powerful and popular office.

The following general deductions may be drawn from the remarks offered on the various mortality Tables we have passed under review. Halley's Table was not based on English data, and therefore afforded but little guide to the duration of English life. It is chiefly noticeable as being the first known Life Table constructed upon correct principles. The Northampton Table, being founded on incorrect data, was never of much value in determining the duration of life. Its chief fault is, that it favours old lives at the expense of the young ones. Annuity Societies based upon it (except after considerable correction) are certain to sustain loss. The Carlisle Table at first gave a longer duration of life than actually existed, taking the country throughout, but owing to a rapid improvement in the mortality of the kingdom, it soon came to be a pretty correct guide; and the Offices founded on it have, for the most part, been eminently successful. It now pretty closely represents *assured life,* as far as the results are known. The *Equitable* Society Table was chiefly valuable by reason of its results being deduced entirely from assured life, and as confirming very generally the accuracy of the Carlisle Table. The Government Table was based on the experience of the life of annuitants as distinguished from assured life. From causes which we have already noticed, it gives an expectation too low for males, and too high for females. It may, however, be of great use to Annuity Societies. The Experience Table may be looked upon as the best exponent of the expectancy of assured life at the present time; as the English Life Table is undoubtedly the best exponent of the general mortality and expectancy throughout the kingdom. Most new Offices, we suspect will adopt it. Deparcieux most probably *over-states* the value of French life at the present time.

Professor de Morgan has called attention to the fact that, at least, some part of the difference which is observable in the several mortality Tables is due to the "real improvement of life which has taken place from the introduction of vaccination, more temperate habits of life, better medical assistance, and greater cleanliness in towns." All these points will be considered in the next division of our subject; and, in closing this chapter, we feel, with the North British reviewer, from whom we quote, fully warranted "in asserting, without qualification, that the law of mortality has been ascertained so accurately, from sufficient data, as to admit of the most confident reliance on its general operations."[1]

[1] *North British Review,* Nov., 1849.—Art., Insurance.

CHAPTER II.

THE THEORY AND PRACTICE OF LIFE ASSURANCE CONTINUED.

Having now seen that the duration of human life, in this country at least, has been reduced to a *certainty*, for the variations in the several mortality Tables passed under review are, we believe, all satisfactorily accounted for, and therefore tend rather to confirm than cast a doubt on this conclusion—we are in a position to advance another step. This however must be done steadily; for if we fail to make ourselves understood at this point the connexion will be lost, and much that follows rendered unintelligible. Let us then recapitulate, and bring to our aid one or two simple illustrations. The theory is,—that while of all things the duration of individual life is the most *uncertain*, that of a number of individuals is, in the aggregate, unmistakeably certain. So that out of a multitude of persons of a given age, it may be predicted with considerable accuracy how many will die *each year* until the whole are extinct.

The method of arriving at this mean duration of human life has been already explained in the preceding chapter, but a further illustration may be advantageous to the reader, and useful in an example which is to follow. Take the number of years lived through by a person from birth to death, and also of a thousand others born at the same time, and dying at all ages from 1 to 100 years old. The number of years thus lived through by each person being added into one sum, and being divided by the number of persons, the mean duration of life is ascertained. Thus, if the first ten persons of the number referred to lived one year each, the next ten two years, and so on, every succeeding ten taken note of having survived each one year more than the preceding ten noted, the number of years (there being 100 times 10, or 1000 in all) which would be lived through by the last ten would be 100 years each, and the total years lived through by the whole number collectively would be 50,500; and the sum being divided by the number of persons, gives a term of 50½ years as the mean duration of each.

It is not intended to say that the above is the true mean of existence brought out by experience. It is indeed only an example of the method employed to arrive at a basis for calculation.

A writer, whose clearness of style and facility of illustration will have to justify us in laying him several times under contribution in the course of this chapter, presents us with the following examples of the practical application of the theory on which Life Assurance is based.

"To proceed now with the inference which we may draw from the fact now held as proved, that the mean duration of life is a fixed quantity, it follows that if each of 1,000 individuals were to treat with a Company granting annuities on lives, and (as we shall suppose for the sake of simplicity) neither *giving interest for* the purchase-money of the annuity sold by them, nor *taking interest* for the annual payments of annuity made by them, each man paying down for an annuity of £1, to be paid yearly, the sum of fifty pounds ten shillings, the Company would neither gain nor lose by the transaction, as is plain from the fact of the mean duration of each life on the supposition we have gone upon being exactly fifty years and a half. Some individuals would draw from the Company in all the sum of £100 each, and would be gainers; but others would draw only the sum of £1 each and would be losers. The gain would, however, upon the whole, balance the loss, and at the end of 100 years, the period of existence of the longest lives, the last £1 would be drawn from the coffers of the Company, and the whole body of annuitants, each having drawn his annuity of £1 during his life, would become extinct."

The example is then reversed, and applied to Life Assurance in the ordinary method:—

"The same body of 1,000 individuals in place of paying down a round sum at once, and receiving a small annual return, choose to engage to pay to the office a small sum annually, and the office agrees to pay a round sum at the death of each. Interest, as in the previous example, is thrown out of account, and the office is not supposed to pay anything more than the actual sum it receives. Each individual of the 1,000 pays to the office during every year of his life the sum of £1 yearly, and the office in return agrees to pay £50 10s. to every man on the day on which he dies. A moment's consideration will show that the office is equally safe in this transaction, and equally certain of fulfilling its engagements, as in the instance of an annuity. One man pays in £1, and dies at the end of the year; the office pays him on the day of his death the sum of £50 10s., and thus he is a gainer. Another man pays into the office £1 annually for 100 years, and upon the day of his death the office pays him the sum of £50 10s.—he is thus a loser. And in the same way the other individuals are some losers, others gainers; but the gains exactly correspond with the losses; and at the end of 100 years the sum of £50 10s. has been paid by the office to every man, and with the last payment its coffers have been exhausted."*

The *interest* referred to in the preceding examples opens up to the reader a new phase of the subject. Another element is introduced: and it is now seen that the main considerations in the practice of Life Assurance are—LIVES and MONEY, *i.e.*, the *probable* duration of life, and the *probable* interest which money will realize over, or during a series of years. "These two matters of fact," says an able writer in the *North British Review*, "These two matters of fact—the rate of mortality, and the rate of interest—being ascertained and assumed, the groundwork is laid for proceeding to the business of actual assurance, and to all transactions in which the pecuniary interest of individuals is dependent on the value of life." Various collateral considerations surround the question which we shall deal with as we proceed. At present we must confine ourselves to the points immediately before us.

The important operations of *interest*, we frequently find too little understood even in the ordinary routine of business: we may, therefore, fairly assume it to be even less so when applied to the more complicated practice of Life Assurance, We do not purpose to go further into the question *now* than appears necessary for the full understanding of this section of the subject. In a future section we shall enter further into the details of its operations; and we may fairly predict that the results will astound the majority of our readers.

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* The above remarks are extracted from a clever little book published about thirteen years ago, entitled the *Handbook of Life Assurance*, long since out of print.

The effect of *interest* on the examples just given would be in the one case *to raise the annual return given by way of annuity above what would be given in the case of no interest being allowed*, and in the other *to diminish the annual payment to be made to the Office for benefit guaranteed by them to be paid at death on an assurance.*

We may now venture upon another example, which will bring us nearer to the actual practice of Life Assurance, premising, however, that it, like its predecessor, has been employed by previous writers.* It is founded on the Northampton Table, and therefore must be understood to be *only* employed for the purpose of illustration. This Table shews that out of every 11,650 persons born alive, 46 will be living at the age of 90: of these 12 will die in the course of the first year, 10 during the second, 8 during the third, 7 during the fourth, 5 during the fifth, 3 during the sixth, and the last remaining life will fail in the course of the seventh year. "It is," says a writer in the periodical just referred to, "a favourite mode of exemplifying Life Assurance calculation to suppose these 46 persons, aged 90, associating for the purpose of assuring £100 to each at death. They are supposed to proceed upon the principle of paying all that is required in one sum at first, thus forming a fund which is to answer all the demands which are to be made upon it." The advanced age of 90 has been adopted with a view to shorten the example, which if a younger age were given would be long and tedious. The interest assumed is 3 per cent. —that being the rate at which the fund is supposed to be improved; and the object is to ascertain what sum, *by way of present payment*, each is to contribute to the fund, so that it may discharge £1,200 the first year, £1,000 the second, £800 the third, and so on. In order then to discharge—

£	£	£	s.	d.
1200, at the end of the first year, the society must be provided with	1200, discounted at 3 per cent., for one year	1165	1	0
1000, at the end of 2nd year,	1000, ditto, for 2 years	942	12	0
800, at the end of 3rd year,	800, ditto, for 3 years	732	2	0
700, at the end of 4th year,	700, ditto, for 4 years	621	18	7
500, at the end of 5th year,	500, ditto, for 5 years	431	6	0
300, at the end of 6th year,	300, ditto, for 6 years	251	5	0
And in order to discharge the remaining £100 at the end of the seventh year, with £100, discounted at 3 per cent., for seven years		81	6	2
In all		£4,225	10	9

This, divided by 46, gives £91 17s. 2d. as the sum (technically called *premium*, although paid in one sum) which each person would need to pay at the foundation of the Society; and this sum of £91 17s. 2d. is the present value of a *reversion* of £100 at the age of 90, according to the Northampton Tables, taking interest at 3 per cent.

To continue the illustration: supposing such a Society to be constituted, and £4,225 10s. 9d. to be paid in by the 46 members, we shall next see how its business would proceed until at the close of seven years "death put a period to the account:"—

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* Vide Chambers' Information for the People, art., Life Assurance.

The original contribution of £4225 10s. 9d. being put out to interest, at the end of the first year amounts to	£4,352	5	2
From which deduct for the twelve lives which fail in the course of the year	1,200	0	0
Fund remaining at the commencement of the second year	3,152	5	2
Which, bearing one year's interest, will amount to	£3,246	16	8
From which deduct for the ten lives which fail in the course of the year	1,000	0	0
Fund remaining at the commencement of the third year	2,246	16	8
Which, bearing one year's interest, will amount to	£2,314	8	2
From which deduct for claims	800	0	0
Fund remaining at the commencement of the fourth year	1,514	8	2
Which, bearing one year's interest, will amount to	£1,559	16	8
From which deduct for claims	700	0	0
Fund remaining at the commencement of the fifth year	859	16	8
Which, bearing one year's interest, will amount to	£885	10	5
From which deduct for claims	500	0	0
Fund remaining at the commencement of the sixth year	385	10	5
Which, bearing one year's interest, will amount to	£397	1	8
From which deduct for claims	300	0	0
Fund remaining at the commencement of the seventh year... ...	97	1	8
Which, bearing interest, will amount to	£100	0	0
Which will exactly discharge the last remaining claim	100	0	0

Inasmuch as lives are insurable from the age 15, indeed in some Offices from birth, to follow the calculation through in this manner would be a very serious and lengthy business, and no end would be gained, beyond that already secured. All persons of the same age in any particular Life Office, are considered as a distinct group assuring each other, and the calculations are followed out, in effect, in the manner above described. It is quite immaterial, so far as the advantage of an Office is concerned, at what age a person commences to assure his life: the variation in the premium at each age is graduated so as to meet the increasing risk at the advanced ages; and although it is customary with Offices not to assure persons at ages much beyond 60, the reason is rather because sufficient numbers cannot be obtained at the advanced ages to constitute a proper average, than from any difficulty in deciding upon the rates. It is also quite the same thing to an Office with an average number of lives, whether the premiums be paid down in one sum (as in the previous examples) or by annual, half-yearly, or even quarterly payments.

We do not purpose entering more fully into details respecting the construction of *rates of premium* here, a separate section in this division is set apart for that purpose, and in that the rates of all the existing Offices are classified. Our present object is rather to direct prominent attention to the fact, that it is not upon a knowledge of the duration of life *alone*, however carefully *that* may have been ascertained, that the working of Life Offices depends, for at every turn, and in every calculation, the element of *interest* plays an important part.

This brings us to a point at which we may again assert, without fear of being misunderstood, that LIVES and MONEY are the two fundamental elements upon which the structure of Life Assurance has, and must, continue to be raised. This fact is no discovery of ours. Other writers have preceded us in dealing with it; and the reader shall have the benefit of their conclusions: for we are most thoroughly convinced that if this circumstance be lost sight of, all attempts to understand the relative capabilities and advantages of Offices will fail, and we now proceed to strengthen this position.

The talented author of a pamplet, entitled "Life Assurance; its Schemes, Difficulties, and Abuses,"* which has been much read, says:—

> "The scheme of Life Assurance is supported solely on the hypothesis, that the contributions of the members taken year by year, and invested in some fund *which will produce an interest thereon*, will be sufficient of themselves to pay the representatives of each member when his life drops in, the sum assured under his policy. The truth of this hypothesis evidently depends on several considerations; the most important of which are as follows:—1st. That the *probable average duration of life shall have been correctly estimated* by the Society, more especially that it shall not have been overrated. 2nd. That the *full rate of interest assumed by the Society in its calculations shall be actually realised on all its funds.* 3rd. That a surplus shall be annually created, at least sufficient to discharge all the expenses ot management. 4th. That an equal, or nearly equal, degree of risk shall be distributed over all the lives: and 5th. That the funds of the Society shall be invested in such securities as will not fail to reproduce them undiminished in value when required for the necessities of the Institution."

It will be observed that the three last considerations, although very important ones in practice, are entirely subordinate to the main considerations in the first and second propositions: which entirely correspond with those we have laid down.

Another writer of ability says:—

> "In attempting to judge ot the merits of the various Associations for Life Assurance, the subjects with which they have all to deal—namely *Lives* and *Money*—should always be considered in the first place. By making these the grounds of enquiry and reasoning, the necessary general results as affecting the interests of individual assurers should not be difficult to ascertain. *The intended assurer should not allow himself to be bewildered* by the apparent intricacies or discrepancies of the different schemes of Life Assurance Companies. However intricate they may appear, whatever different advantages they may promise, in order to lead the assurer within their own doors *let him always remember that they have one common basis, and one only*, on which their separate Institutions are raised. The benefits they afford all arise—first, *from a proper selection of persons to be assured;* and, secondly, *from the accumulation of money to be received from them. No other matters can enter into the true causes of the success or prosperity of Life Companies;* and a very little examination will shew that, speaking in a general sense, the persons assured *should derive the same benefits from every Life Company, provided always that the premiums paid by the assured be properly adjusted according to the different ages, and the system of returning the surplus arising from the excess of premiums be just and equitable.* Where" continues the writer, "any Company *pretends* that its scheme affords peculiar benefits, the pretended advantage is only apparent. It cannot arise from that Company making more for their money and lives, during a certain period, than others do. In *that respect* all Companies will on an average be equal. *Any apparent advantage must only arise from a peculiarity in the plan of distributing the gains on the money and lives.* As the success of all Societies depends upon the same circumstances, it will be seen that no Assurance Company can give superior benefits without making the insured pay in the exact proportion of the higher benefit. No insurer ought to complain of such a result; but let every one intending to assure carefully examine, and *think a little for himself*, lest he

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* Published at the POST MAGAZINE Office, Price 1s.

find out, when it is too late to remedy the error, that he has joined a Company to whom he must pay more than he ought to have done for the promised benefit. *The long experience* of established Companies, and the enquiries of scientific men, will enable every one to judge what he ought to contribute to secure the benefits of Life Assurance."*

Some qualification is required to several of the propositions in the preceding paragraph: although as a whole, they admirably enforce the considerations we have advanced. It is obvious that *superior management*—in which *economy* is included—will speedily advance the office so placed, or, we might say, in these days of official extravagance and incapacity, so blessed, in a position far before others started at the same period and on the same principles, but conducted with less prudence and skill. Skilful management, indeed, is a vital question with an Insurance Office. However soundly constituted, without this, an office will become a wreck. It is like a strong ship with an incompetent commander. like a noble frame with a diseased heart. The careless *selection of lives*—the imprudent *investment of the funds*—and costly management, are breakers a-head, are all derangements of the system, which at any moment may arrest its career. A writer in the *Morning Herald*, during the period of the assurance controversy (a few years since) even went the length to assert that the *whole question of security and prosperity* was "confined to the administration of their business affairs," and "not whether the rates of premium were sound or unsound," and to a very considerable extent he was right.

Mr. Finlaison has indeed proclaimed a *third* element, which, considering the authority, deserves to be noted. This is the *character of the investments* of an Assurance Office. His views thereon may be gathered from the following (question 586)—"Then, if I rightly understand you, there are three elements in the calculation. The first is the element of risk, which must depend upon the computation of life; the next is the element of interest, which defines the supposed annual income from premiums in hand; and the third is the *character of the assets in which the capital of the Company is invested?*" To which Mr. Finlaison replied, "certainly." In answer to a subsequent question he pointed out that *interest* was the agent of increase in the funds of an Assurance Office, adding, "and when interest above the rate contemplated in the calculation is realised, the surplus of interest so obtained is converted into capital, and is of course invested with capital as occasions arise, *and the safety of an Assurance Office, no doubt, in a great measure depends upon the validity of the securities which it has taken.*" †

We think, however, this point may be fairly included in the general consideration of "money," and now proceed to the next stage.

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* John Sturrock, jun.'s pamphlet on Life Assurance.

† *Vide* Evidence before Select Committee on Assurance Associations, 1853.

CHAPTER III.

INTEREST HISTORICALLY CONSIDERED.

In tracing the progress of Life Assurance we took occasion to direct attention to the early writers on the subject of *Interest.* A correct understanding of the operations of the latter was necessary to the proper development of the former. Their growth, therefore, was almost necessarily concurrent, and to some extent identical: for the earlier writers directed attention to both. Mr. Hodge, in an excellent paper on the *rates of interest for the use of money in ancient and modern times*, recently read before the Institute of Actuaries, says—"The object of the actuary, in applying the science of vital statistics to pecuniary transactions, being to determine the values of payments dependent upon conditions of human survivorship, and therefore necessarily deferred for periods of longer or shorter duration, it is obvious that the *rate of interest at which money may be increased* is an element of his calculations, nearly if not quite as important as the probable risk of mortality that may effect the lives involved."[*] We purpose to glance at the subject *historically* now, and practically in another section.

Interest, in the sense of a recompense or return for money lent, must have originated very early in the world's history, probably dating with the earliest mercantile transactions. There are frequent allusions to it in the scripture, chiefly however under the title of "usury," which appears to be the old English word for interest. In the Latin this word signifies money paid for the use of money lent; but the more learned assert it to be a Hebrew expression signifying "that which bites"—an exceedingly proper derivation as the term is now understood; but it was originally applied to *all profit* paid for the use of money.[†] The term *usury* is now understood only in the sense of taking more interest for the use of money than the *law* allows. Hume, the English historian, speaks of the adoption of the word *interest* as "a lucky accident in language which has great effect on men's ideas." Another historian, Robertson, tells us that the fixed rate of interest in the 12th century was 20 per cent. In 1560, it was fixed in Spain, Germany, and Flanders, by the Emperor Charles V., at 12 per cent. Till the 15th century no *Christians* were allowed to receive interest of money, and *Jews* were the only usurers. This led to the frequent persecution and banishment of this sect of wanderers.

[*] Vide *Assurance Magazine*, Vol. vi., p. 801.

[†] Vide Mr. Hodges' Paper.

We learn, upon what appears to be good authority,[*] that the lowest rate of interest in Athens was 10 per cent. per annum, and the highest 36 per cent. : the ordinary rate being from 12 to 18 per cent. In Rome similarly exorbitant rates were exacted; but the wisdom of her lawgivers soon devised some reasonable restrictions. About the year B.C. 346, the rate was limited to 5 per cent. ; and five years later (B.C. 341), in a time of great public commotion, and amid distress so severe and universal as to cause a general bankruptcy, or entire abolition of all debts, the practice of taking interest for money was altogether forbidden, and he who received more than he had advanced was rendered liable to four-fold restitution.[†] These prohibitions continued sometime in force, although they were frequently evaded. How long they exercised a beneficial influence we cannot say; but we are told by Adam Smith that the "virtuous Brutus," who flourished in the last century before the birth of Christ, "lent money in Cyprus at 48 per cent.," as indeed may be learned from the letters of Cicero. Under Alexander Severus (A.D. 230) the rate at Rome was reduced by legal enactment to 4 per cent.

It is not to be wondered, when such extortionate rates of interest from time to time prevailed, that usury grew very early, and very much, into disrepute. In the book of Ezekiel, (xviii. 13,) he that "hath given forth upon usury, and hath taken increase," is placed in the same class and threatened with the same judgments as the idolater and the adulterer, the robber and the shedder of blood. In the fifth chapter of Nehemiah, 10th verse, it is written, "I pray you let us leave off this usury;" and in the 11th verse, "Restore, I pray you, to them, even this day, their lands, their vineyards, their oliveyards, and their houses; also the hundredth part of the money, and of the corn, the wine and the oil, that ye exact of them." So that interest was probably taken "in kind," as well as in money. "The hundredth part," here referred to, is supposed to have been a monthly return for money on goods lent, being at the rate of 12 per cent. per annum, "which is supposed to have been the usual rate of interest in Judea at the time."[‡]

The earliest enactment upon the subject mentioned in English history, is an Act passed in the reign of Richard I. (A.D. 1197), *forbidding Christians to take interest for money.* It is mentioned in Macpherson's *History of Commerce*, as one of the conditions of Magna Charta, granted in the 17th year of John (15th June, 1215), "That the debts of a minor shall not bear interest, whether they be owing to a Jew, to the King, or any other person:" a statement, says Mr. Hodge, that would tend to show it was not only permissible but usual for the King and his Christian subjects to practise usury: and Macpherson remarks, "This would seem to authorize interest, *though repeatedly forbidden by the ecclesiastical canons.*" Twenty years later (1235) the statute of Merton, 20 Henry III, enacted that "usurers shall not run against any within age from the time of the death of his ancestor, whose heir he is, until his lawful age."

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[*] Bœckh's *Public Economy of Athens*, translated by Sir G. C. Lewis, 1842.

[†] Hodge, quoted from Arnold, ii., p. 126.

[‡] Hodge, p. 308.

It was about this period that a number of wealthy Italians left their native cities, where they had acquired their riches by commerce, and spread themselves through Europe in the capacity of money-lenders. They settled in London in large numbers, and engaged in marine insurances and other speculations suited to their vast pecuniary wealth. They were called "Lombards," and their locality yet bears their name: it is still the street of money-lenders, banks, insurance brokers, and bill discounters. The Lombards grew into repute both with sovereigns and the clergy, and to a great extent usurped alike the business and the wealth of the Jews. An open warfare, indeed, was waged against these latter, more particularly by those who were indebted to them, and who for obvious reasons were desirous of seeing them expelled the country. Henry II. levied heavy exaction upon them; and at the coronation of his successor, Richard I., the populace, apparently under the Royal sanction, massacred and plundered all the individuals of that unfortunate class who fell into their hands. In the following year (1190) a similar outrage took place in York, and Hume tells us, "The gentry of the neighbourhood, who were all indebted to the Jews, ran to the Cathedral, where their bonds were kept, and made a solemn bonfire of the papers before the altar," Stow, in his *Survey of London*, says (A.D. 1263), "The barons slew the Jews at London, seven hundred; the rest were spoiled, and their synagogue defaced, because one Jew would have forced a Christian to have paid more than two-pence for the loan of twenty shillings a week." And a few years later (1290) Edward I. banished all the Jews from England, confiscating the whole of their property, with the exception of sufficient "to beare their charges till they were out of his realme." Stow says the number so expelled was 15,060, whose houses being sold, "the King made a mighty masse of money."

The spirit which tolerated or directed these persecutions sufficiently accounts for some of the legal enactments which followed. The "Statute of Jewry," passed in the reign of this Edward, after reciting that the King has seen divers evils and the disinheriting of good men of his land from the usuries of the Jews—albeit he and his ancestors had received much benefit from the Jewish people in times past—enacts "nevertheless, for the honour of God and the common benefit of the people, that from henceforth no Jew shall lend anything upon usury, either upon land, or upon rent, or upon other thing, and that no usuries shall run in time coming from the feast of St. Edmund last past (retrospective legislation!); and if any Jew shall lend at usury, contrary to this ordinance, the King will not lend his aid, neither by himself nor his officers, for the recovery of the loan, but will punish him at his discression for the offence." After regulating the places of residence of the Jews—Old Jewry and Jewry-street, Aldgate, were probably among these—the statute further enacts "that every Jew above seven years of age shall wear a badge, and every one above twelve shall pay threepence tax yearly to the King, 'whose bondsman he is.'" This statute is attributed, by Mr. Hodge, to the influence of the Lombards, "which about this time had reached its highest pitch at the English Court." The next general enactment bearing upon the subject, of which we have any direct knowledge, was passed in the 3rd Henry VII. (1488), and is entitled "An Act against Usurie and Unlawful Bargaynes," and recites that "ymportable damages, losses, and empoveryssbing of this realme, ys had by dampnable bargaynes, groundyt in usurie, colorde by the name of new chevesaunce (agreement), &c. &c." and enacts that all such contracts shall be void, and the seller, owner, bargainer, or promiser be liable to a penalty of £100 for every such bargain. The "Chancellour of Inglonde" was empowered to try such causes out of the city or burgh where the offence took place, as probably from local influences "lytell of the premysses" would be fulfilled. The Act itself was, however, repealed eight years afterwards on the ground that it was "so obscure, darke, and diffuse, that the true intent of the makers thereof could not be perfectly understood." The prohibition of usury, however, was again enacted, with the penalty of the forfeiture of one moiety of the goods, chattels, or merchandises that might be the subject of usurious bargains.*

Some of our readers may not have discovered the bearing of this apparent digression on the subject under consideration. The early abuses in connection with usury first directed the attention of the Legislature to provide remedies; and ultimately led to the *fixing, or limiting, the rate of interest by the State;* a step which, although no doubt fraught with many and serious disadvantages, in a highly-developed mercantile community, where the laws of supply and demand are understood and appreciated, was a great safeguard in a less advanced stage of society, and tended to prevent the earlier Assurance Societies from anticipating a higher rate of interest than they might afterwards have obtained: thus curtailing, at least, one of the elements of misfortune. At the time we have now arrived at, 1546, in the 37th year of the reign of Henry VIII., the first Act was passed defining or limiting the legal rate of interest to be charged in England. This Act recites that "diverse and sondrie actes, statutes, and lawes have been ordeyned, had, and made within this realme for the avoidance and punishment of usurie," and fixed the rate of interest for the future *at* 10 *per cent.* It, however, only continued in force for seven years, when it was repealed (1st May, 1552) by the 5 and 6 Edward VI., cap. 20. This last Act was entitled "A Bill against Usurie," and after much violent abuse of the "greedie, uncharitable, and covetous persons" guilty thereof, re-enacted the prohibition contained in the previous Acts we have noted, with nearly similar penalties.

"Notwithstanding, or perhaps in consequence of, this act," says Mr. Hodge, in the paper before referred to, "the ordinary rate of interest after it passed was 14 per cent.;"—Queen Mary herself borrowing money of the citizens of London at 12 per cent. Concurrently with the last-named act, we are told by the same authority, a statute was passed forbidding any but the King's Exchangers to exchange or rechange gold or silver for the purpose of profit. Many Acts had been directed against this practice, which "appears to have been looked upon with as much jealousy as usury itself." These must have operated unfavourably for the Lombards.

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* Hodge, page 330.

The statute of 1552 (5 and 6 Edward, cap. 20) remained in force until 1571, when it was repealed by the 13th Elizabeth, cap. 8, which recites that the said "Acte hath not done so much good as was hoped; but rather that the vice of usurie, and especially by waye of sales of wares, and shiftes of interest, *hath more exceedingly abounded*." The limitation of the rate of interest to 10 per cent., enacted by the 37th Henry VIII., was then revived, with the mild penalty, however, that any offender against the statute was to forfeit so much as should be reserved by way of usury above the principal for any money so lent or forborne. Another clause enacted that such offenders were also to be punished and corrected according to the *ecclesiastical laws against usury*—a reservation, says Mr. Hodge, of the power of the Church included in nearly all the Acts for the repression of the offence. The Act was to remain only five years in force, unless renewed, which it was several times, and "made perpetual" in the 39th year of the reign of Elizabeth.[*] This perpetuality lasted for about 30 years; for in 1624, (21 James I.,) the rate was reduced to 8 per cent., and the word *interest* first used instead of usury.[†] The Rump Parliament reduced the rate to *six* per cent., and this was confirmed at the Restoration. In 1714, in the 13th year of the reign of Queen Anne, the limitation became reduced to *five* per cent., and remained so, with one or two temporary suspensions, during periods of great commercial pressure, until a few years, when, for a similar reason, the operation of the Act was again suspended, and still remains so. During the Protectorship of Cromwell the Jews regained their wonted position of money-lenders, and have since retained it without much interference or persecution.

Leybourn, in his *Panarithmologia*, published in 1693, and already quoted in previous chapters, gives us some information as to the rates of interest prevalent in this Kingdom at that period, 160 years ago. Referring to a series of Tables he had published, he says, "Each Table may most properly be appropriated to the nature of the thing to be purchased, as—1. The Table of *five* per cent. may most fitly be used in the purchasing of *Freehold Land*, which, for its permanency, and being (of all other purchases) least liable to casualties, a man may, for the less profit, part with his money in such purposes—2. The Table of *six* per cent. *(which is the present authorised rate for*

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[*] "This salutary statute (says the writer of a clever article on Interest, in the *Encyclopædia Britannica*, 7th Ed.) was opposed even by those who it might have been expected would have been among the first to emancipate themselves from the prejudices of the age with all the violence of ignorant superstition. Dr. John Wilson, a man famous in his day, and celebrated for the extent and solidity of his learning, stated, in his place in the House of Commons, that 'it was not the amount of the interest taken that constituted the crime; but that all lending for any gain, be it ever so little, was wickedness before God and man, and a damnable deed in itself, and that there was no mean in this vice any more than in murder or theft.' In order to quiet the consciences of the bench of Bishops a clause was actually inserted declaring *all* usury to have been forbidden by the law of God, and to be in its nature sin, and detestable. At first this statute was limited to a period of five years; but, 'forasmuch as it was by proof and experience found to be very necessary and profitable for the commonwealth of this realm,' it was in the same reign made perpetual."—39th Elizabeth, cap. 18.

[†] "At the beginning of the 17th century land was commonly bought at 20 years' purchase, and never at less than 16 years' purchase; while at the end of the was still at 20 years' purchase."—De Morgan.

money) may most fitly be used in the purchase of *Copyhold Estates* and in *Leases of Land*, the one being subject to fines on every alienation, and other services; the other being but for term of years, and so may want encouragement for the improvement of the same. —3. The Table of *eight* per cent., which may be used in the purchase of leases of land, and of good new built *Houses*, well *inhabited*, and standing in probable places for habitation.—4. The Table of *ten* per cent. may be used in the purchase of leases of *indifferent houses*, for such are liable to many *casualties*, as wind, rain, fire, and such like, so that no man will lay out his money upon such leases but he will have at least *ten per cent.* profit for his money." This reads almost as fresh as a chapter from Ward on *Investments* in the present day. But the rates of interest have considerably changed.

When the Act of Queen Anne is in force, all interest above the legal standard of Britain is usury, and punishable under the statute. Bills, &c., having less than 12 months to run, are however exempted by 1 Vic. c. 80. The law does not recognise *compound interest;* and the customary evasion has been by the borrower granting further acknowledgments of the interest as though it were principal—thus *capitalising* it, which is the true operation of compound interest. In banking and mercantile accounts the law, indirectly, does admit compound interest. Judgment debts carry 4 per cent. interest by virtue of 1 and 2 Vic., c. 110. Ordinary debts do not carry interest unless they be of a class subject to that custom amongst merchants and traders, or unless subject to special contract. So that the law on this subject cannot be said to have arrived at any satisfactory position; but it is not improbable that during the next few years it may again become the object of legislation.

Most other countries have, at some period of their history, found it necessary to limit the rate of interest. In 1228 the rate was fixed at Verona at 12½ per cent. per annum. In 1242, James I., King of Aragon, fixed it at 18 per cent. In 1270 the legal rate at Modena was 20 per cent. There is an edict of Philip Augustus, near this period (1272), limiting the Jews in France to 48 per cent.! In 1311 Philip IV. fixed the interest that might be legally exacted in the fairs of Champagne at 20 per cent. In 1336 the Republic of Florence borrowed money of individuals upon an assignment of taxes at 15 per cent., "which appears to have been above the common rate of usury." In 1490, at Piacenza, the rate was as high as 40 per cent. In 1491 the first public sanction by the Popes to the payment of interest was given. In 1545 Charles V. fixed the rate in the Low Countries at 12 per cent. In 1586 a law was passed in Scotland fixing the legal rate at 10 per cent. In 1773 the rate was fixed in Ireland at 6 per cent. by 14th George III. In the United States the limit is 8 per cent.

The limits fixed by legislative enactment offer no exact criterion of the rates actually existing in practice, although they undoubtedly exercise some influence. The *price of the Funds* is perhaps the best criterion in this country, and has been taken as such by the most experienced writers. They (the public funds) indicate the abundance or scarcity of money—are affected by war and peace—by national prosperity or adversity. The Funds may be termed the national thermometer—they register our successes and our disasters, our prosperity and adversity, scarcity and plenty. As the price of the Funds goes down the rate of interest rushes up. War and scarcity operate in this direction, and afford us another remarkable instance of the operation of the law of compensation. War and famine accelerate the rate of mortality, but they also improve the rate of interest, so that it is probable Assurance Offices with large funds realize, under such conditions, as much by excess of interest on their investments as they lose by the excess of mortality in the shape of claims.

Mr. Charles Babbage, in his *Comparative View*, says—"With the view of getting some approximation to the average rate of interest in this country, I have examined a period of 92 years of peace and war, commencing at 1731, and terminating at 1822. By extracting from the Tables collected and published, by M. Cæsar Moreau, the highest and lowest price of the three per cents. during each year, it appears that the average annual price was—

78 1-10th (78·1) during 48 years of war.
86 1-8th (86·14) during 44 years of peace.
79 1-3rd (79.33) during 92 years of war and peace.

These averages are deduced from the mean of the highest and lowest prices during the year; more numerous observations might alter them a little, but they are sufficiently accurate for the present purpose. The rates of interest that these averages would indicate are—

4 1-10th (4·1) per cent. during war.
3½ (3·47) „ during peace.
3¾ (3·78) „ during war and peace.

If it be considered that it is generally possible, without additional risk, to make rather a higher rate of interest than that which is yielded by the 3 per cents., it seems reasonable to conclude that 4 per cent. annually is about the rate of interest which an establishment calculated for any considerable duration may expect to make."

In 1829, Mr. Finlaison wrote, "I take it for granted that it will be considered safe enough to assume that money in a long course of years, will so accumulate through all fluctuations as to equal a constant rate of 4 per cent., because in point of fact money has hitherto accumulated at 4½ per cent., whether we reckon from 1803 or from 1783."

Professor de Morgan, a little later, said, "assuming the necessity of calculating upon a rate of interest *something less than that which can actually be attained*, I should think that no Office would be justified in supposing more than 3 per cent., *with Tables sufficiently high to come any way near to the actual experience of mortality*." And in another place he says, the rate of interest assumed by Life offices should "never be above that at which the Government can borrow"—namely, that regulated by the price of the funds.

Seeing the importance of the question, we have thought it desirable to give the following abstract from the third edition of Willich's excellent "popular Tables," showing the price of 3 per cent. consols, and the rate of interest realised upon every £100 invested in them during a period of 125 years—from 1731 to 1856—also noting the existence of peace and war.

TABLE

Shewing the average price of 3 per Cent. Consolidated Annuities, with the average rate of Interest, from 1731 to 1856.

Peace or War.	Year.	Price of Consols.	Average rate of Interest ⅌ cent			Peace or War.	Year.	Price of Consols.	Average rate of Interest ⅌ cent		
		£	£	s.	d.			£	£	s.	d.
PEACE.	1731	96	3	2	6	WAR.	1794	67½	4	8	10
	1732	98	3	1	2		1795	65¾	4	11	3
	1733	100	3	0	0		1796	61⅞	4	16	11
	1734	92	3	5	2		1797	52	5	15	4
	1735	95	3	3	1		1798	52⅝	5	14	0
	1736	102	2	18	9		1799	60¾	4	18	9
	1737	106	2	16	7		1800	63⅝	4	14	3
	1738	104	2	17	8		1801	62⅛	4	16	7
	1739	101	2	19	4	PEACE.	1802	72½	4	2	9
WAR.	1740	99	3	0	7	WAR.	1803	61⅝	4	17	4
	1741	95	3	3	1		1804	56¼	5	6	8
	1742	100	3	0	0		1805	59½	5	0	9
	1743	101	2	19	4		1806	61½	4	17	6
	1744	94	3	3	10		1807	61	4	18	4
	1745	89	3	7	4		1808	65⅞	4	11	1
	1746	82	3	13	2		1809	66⅞	4	9	8
	1747	83	3	12	3		1810	67⅛	4	9	4
	1748	86	3	9	9		1811	64¼	4	13	4
PEACE.	1749	98	3	1	2		1812	59	5	1	8
	1750	100	3	0	0		1813	61	4	18	4
	1751	100	3	0	0		1814	67	4	9	6
	1752	104	2	17	8	PEACE.	1815	59¾	5	0	4
	1753	104	2	17	8		1816	62	4	16	9
	1754	103	2	18	3		1817	73⅛	4	2	0
	1755	96	3	2	6		1818	77½	3	17	4
WAR.	1756	89	3	7	4		1819	71⅞	4	3	5
	1757	90	3	6	8		1820	67⅞	4	8	4
	1758	92	3	5	2		1821	73¾	4	1	4
	1759	83	3	12	3		1822	79⅛	3	15	10
	1760	82	3	13	2		1823	78⅞	3	16	1
	1761	79	3	15	11		1824	90¾	3	6	1
	1762	75	4	0	0		1825	84⅝	3	10	11
PEACE.	1763	89	3	7	4		1826	79⅛	3	15	10
	1764	84	3	11	5		1827	83⅛	3	12	2
	1765	88	3	8	2		1828	84⅝	3	10	11
	1766	89	3	7	4		1829	89⅞	3	6	9
	1767	89	3	7	4		1830	85⅞	3	9	10
	1768	91	3	5	11		1831	79¾	3	15	3
	1769	88	3	8	2		1832	83⅝	3	11	9
	1770	83	3	12	3		1833	87¾	3	8	4
	1771	86	3	9	9		1834	90¼	3	6	5
	1772	88	3	8	2		1835	91	3	5	11
	1773	87	3	8	11		1836	89⅜	3	7	1
WAR.	1774	88	3	8	2		1837	90⅞	3	6	0
	1775	89	3	7	4		1838	92⅞	3	4	7
	1776	84	3	11	5		1839	91½	3	5	7
	1777	78	3	16	11		1840	89⅜	3	7	1
	1778	64	4	13	8		1841	88⅞	3	7	6
	1779	61	4	18	4		1842	91¾	3	5	4
	1780	61	4	18	4		1843	94⅝	3	3	5
	1781	58	5	3	5		1844	98⅞	3	0	8
	1782	58	5	3	5		1845	96¼	3	2	4
	1783	64	4	13	8		1846	95½	3	2	10
PEACE.	1784	57	5	5	3		1847	86⅜	3	9	5
	1785	60	5	0	0		1848	85	3	10	7
	1786	74	4	1	0		1849	93¼	3	4	4
	1787	74	4	1	0		1850	96⅝	3	2	1
	1788	75	4	0	0		1851	97¼	3	2	4
	1789	76⅜	3	18	6		1852	99⅛	3	0	7
	1790	75⅝	3	19	3	WAR.	1853	99¼	3	0	6
	1791	82¾	3	12	6		1854	92	3	4	9
	1792	84¾	3	10	9		1855	89⅝	3	6	0
WAR.	1793	75¾	3	19	2		1856	93¾	3	3	10

The period at which the price of funds was the lowest, and the interest on every £100 invested in them therefore the highest, was in 1797 and 1798, the rates being respectively £5 15*s*. 4*d*. and £5 14*s*. per cent. This was in time of war. In 1781, 2 and 4, they were nearly as low, also in 1804. In each case we trace the influence of war. We can well understand, from a perusal of this Table, how some of the Assurance offices, started at the close of last or the commencement of this century, have amassed wealth. They invested their paid-up capital in the funds when they were nearly at the lowest ebb, and for half a century have been receiving a rate of interest greater than they could have made elsewhere with security, while the principal itself has become nearly doubled by the high prices at which the funds now remain, consequent upon the improved condition and increased wealth of the country. So permanent, indeed, is this improvement that even during the war the variation, if we remember rightly, was never more than two or three per cent., while formerly one year's warfare would bring down the fund some £10 or £12;—*vide* 1792-3 and 1802-3, in the preceding Table. The highest price recorded was in 1737, in time of peace.

The price of funds does not, it is true, actually represent the rate of interest on other classes of investment, but it affords, over a series of years, a pretty fair criterion—operating like a *pendulum*, touching the extremes on either side, but always returning to the centre. In consequence, indeed, of the increased security of the funds over any other class of investment, it is generally understood that a slightly lower rate of interest is obtained. The rate of *Bank Discounts*, *i. e.*, the rate at which the Bank of England will discount first-class mercantile bills, perhaps more nearly represents the current rate of interest in mercantile transactions than any other test. We may, therefore, just glance at these rates during the past century:—

1746 Bank discounts, 4 per cent. No change till 1822.
1822 June 20—Bank discounts 5 per cent.
1827 July 5—Reduced to 4.
1836 July—Increased to 4½; September, to 5.
1838 February 15—Reduced to 4½.
1839 May 16—Increased to 5; 20th June, 5½; 1st August, 6.
1840 January 23—Reduced to 5½; 25th October, to 5.
1842 April 7—Reduced to 4; 1st September, to 3½.
1844 September 5—Further reduced to 2½,
1845 October 16—Increased to 3; 6th November, to 3½.
1846 August 27—Reduced to 3.
1847 Year of commercial distress—14th January, increased to 3½; 21st January, to 4; 8th April, to 5; 2nd August, to 6; 1st October, to 6½; 25th October, to 8; 22nd November, reduced to 7; 2nd December, to 6; 23rd December, to 5.
1848 January 27—Reduced to 4; June 15, to 3½; November 22, to 3.
1849 November 22 · Reduced to 2½.
1850 December 26—Increased to 3.
1852 January 1—Reduced to 2½; April 22, further reduced to 2 (*minimum*).
1853 January 6 · Increased to 2½; January 20, to 3; June 2, to 3½; September 1, to 4; September 15, to 4½; and September 29, to 5.
1854 May 11—Increased to 5½; and August 3, reduced to 5.
1855 April 5—Reduced to 4½; May 3, to 4; and June 14, to 3½; September 6, increased to 4; September 13, to 4½; September 27, to 5; October 4, to 5½; and October 18, to 6.
1856 May 29—Reduced to 5; and June 26, to 4½; October 1, increased to 5; October 6, to 6; November 13, increased to 7; December 4, reduced to 6½; and December 18, to 6.
1857 April 2—*Increased to* 6½; June 18, reduced to 6; and July 16, to 5½; 8th

October, increased to 6; October 12, to 7; October 19, to 8; November 4, to 9; November 9, to 10 [this is the first time in the history of the Bank that the rate has exceeded 8 per cent.]; and December 24, to 8.

1858 January 7—Reduced to 6; January 14, to 5; January 28, to 4; February 4, to 3½; February 11, to 3; December 9, to 2½.

1859 April 28—Increased to 3½; May 5, to 4½; June 3, reduced to 3½; June 9, to 3; July 14, to 2½.

1860 January 19—Increased to 3; January 31, to 4; March 29, to 4½; April 12, to 5; May 10, reduced to 4½; May 24, to 4; November 8, increased to 4½; November 13, to 5; November 15, to 6; November 29, reduced to 5; December 31, increased to 6.

1861 January 7—Increased to 7; February 14, to 8; March 20, reduced to 7; April 4, to 6; April 12, to 5; May 16, increased to 6; August 1, reduced to 5; August 15, to 4½; August 29, to 4; September 19, to 3½; November 7, to 3.

1862 January 9—Reduced to 2½; May 22, increased to 3; July 10, reduced to 2½; July 27, to 2; October 3, increased to 3.

1863 January 15—Increased to 4; January 28, to 5; February 20, reduced to 4; April 23, to 3½; April 30, to 3; May 16, increased to 3½; May 21, to 4; November 2, to 5; November 9, to 6; December 2, to 7; December 3, to 8; December 24, reduced to 7.

1864 January 20—Increased to 8; February 11, reduced to 7; February 25, to 6; April 16, increased to 7; May 2, to 8; May 5, to 9; May 19, reduced to 8; May 26, to 7; June 16, to 6; July 25, increased to 7; August 4, to 8; September 8, to 9: November 10, reduced to 8; November 24, to 7; December 15, to 6.

1865 January 10—Reduced to 5½; January 26, to 5; March 4, to 4½; April 27 to 4; May 11, increased to 4½; May 25, reduced to 4; June 8, to 3½; June 20, to 3; August 5, increased to 4; September 28, to 4½; October 2, to 5; October 5, to 6; October 7, to 7; November 23, reduced to 6; December 28, increased to 7.

1866 January 6—Increased to 8; February 22, reduced to 7; March 15, to 6; May 3, increased to 7; May 8, to 8; May 11, to 9; May 12, to 10; August 16, to 8. August 23, to 7; August 30, to 6; September 6, to 5; September 27, to 4½.

Over a series of years the rate appears to have averaged about 4 per cent., but it is to all appearance increasing.

Most of the well-managed Life Offices, however, seek their more permanent investments in landed security. Here the rate of interest averages very little over that of the funds. At no time during the last 30 years have the funds given a return equal to 4 per cent., 3½ being about the average.

The leading actuaries are pretty well agreed as to the probable rate of interest in this country for some years to come: or rather, perhaps, we should say they were in 1853, when a number of them gave evidence before the Select Committee on Assurance Associations. Mr. Finlaison (late Government actuary) pointed out to the Committee that any estimate of this kind must be matter of conjecture; the grounds depending more or less upon the experience and knowledge of the person conjecturing, but it was his own individual opinion that the rate of interest would be 3½ per cent. for the next forty years. Mr. J. J. Downes, actuary to the *Economic* Office, was of opinion that it was "quite safe to reckon upon 3½ per cent."[*] He had found the average price of consols for the last 25 years to be such as to yield 3½ per cent., viz. about 92. He used 3½ per cent. in his valuation, but added this qualification, that "occasions occur every five years to compensate for any loss of interest that might be experienced in the period," referring, of course, to the periodic valuations of assets and liabilities. He does not appear to have had to take advantage of these occasions, for he adds, "We have always made more than 4 per cent." As an instance of the importance of fixing upon a proper rate of interest, he stated that the "difference of a *half per cent.* in the rate of interest would make a difference of about 5 per cent. in the valuation of the liabilities of an Office at any one time! Mr. T. R. Edmonds, actuary to the *Legal and General* Office, added that "if the Government securities yield 3 per cent., it may be expected generally that the interest of Assurance Offices from good investments would be 3½ per cent," and experience confirms this view as about correct. Mr. Charles Ansell, (of the *Atlas* Office,) stated that he had almost uniformly used the rate of 3 per cent. only. And Mr. W. T. Thomson, (of the *Standard* and *Colonial*,) stated that 3 per cent. was the rate generally used in computations in Scotland.

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[*] In the quinquesimal report of the Economic ending in 1858, is is stated that the *Invested* Capital had produced an average Interest of 4½ per cent.—Note, 1866.

An able writer in *Chambers' Information*, indeed, says:—

> "It appears, from the published report of the *Edinburgh* Life Assurance Company, dated December, 1838, that for the three preceding years (1836, 1837, and 1838, when interest was unusually low), the average rate realised on their funds was £4 16s. 6d. per cent.—about 1½ per cent. higher than the return from the 3 per cents. during the same time. And this, it is stated, was obtained without any part being laid out in the purchase of reversions—on which, it is known, a much higher rate can be got The example of this Office is quoted merely from the circumstance of their report happening to state the precise return at that period. Other Scottish Offices are said to have obtained a higher rate. Most of them state that their funds are invested 'about,' 'at,' or 'above,' 5 per cent. Indeed it is not conceivable that the Offices could make such large returns to proprietors and members, in the shape of dividends and bonuses, if they did not generally improve money at about the rate last mentioned. From all these circumstances, it does not appear likely that calculations for Life Assurance, in which the interest of money is assumed at an average of *four per cent.*, will, while Britain remains in nearly its present condition, prove unsound."

It may be noted as peculiar to Scotland, that the rate of interest to be required on landed securities is there fixed every three or six months by the trustees of a fund established as a provision for the widows of ministers of the Church of Scotland; the trustees of the Writers to the Signet Widows' Fund, and other parties who are largely interested in pecuniary transactions, who meet together periodically for that purpose. This places great power in the hands of the lenders, and while conducted, as it hitherto has been, with fairness, is not prejudicial to borrowers, as they may always know before-hand the rate of interest they will be expected to pay. The rates of interest received on the first-named fund, from 1784 down to 1816, was 4½ per cent.; for the next seven years it was 5 per cent. From 1824 to 1826 it fell to 4 per cent., rising the two following years to 5, and falling in 1830-1 to 3½, which appears to be the lowest rate ever yet received at any period. From 1847 to 1849 it rose to 5, and in 1853 (the last date we have) stood at 3½. The interest on the second-named fund was in 1822 (the first date recorded) 5 per cent., and the same from 1826 to 1828, having fallen to 4 in the interim. In 1830-1 it is down to 3. From 1847 to 1849 it stands at 5, and in 1853 at 3½. The average rate for landed securities in Scotland being for 37 years since 1816, £4 4s. per cent., and for 19 years since 1834, £3 16s. per cent. Mr. Thomson remarked to the Committee that Life Offices have many other modes of investment, to enable them to keep up the rate of interest "to one, or at least a half per cent. above the rate of heritable (landed) securities." These are points of very great importance to *Life Offices*, and hardly less so to assurers if they *take the trouble to understand* them.

CHAPER IV.

FOLLOWING OUT THE PRACTICE OF LIFE ASSURANCE.

We may fairly, now, assume the reader to be pretty familiar with the groundwork on which the practice, as well as the theory, of Life Assurance is based. The two fundamental elements in practice—the rate of mortality, and the rate of interest, we shall consider as settled. The *English Mortality Table* we take as our standard in the one case, although we deem the Carlisle Table equally safe under sound management; and, in the other, *Three per Cent. Interest*, as being justified by past experience, and as not likely to be much affected, at least, for many years to come. Except when otherwise stated, therefore, these will be our data in further examples and comparisons.

We now propose to follow out the practice of Life Assurance in this country, noting the gradual introduction of the various systems or principles.

We well know that this branch of our subject is fenced round by so many interests, and watched over with such great official jealousy, that we shall require to travel over some space to do justice to all the former, and to exercise some caution to avoid coming in unpleasant contact with the latter; but as we have no cause to serve save the truth, and are in no way tied down to advocate any particular office or principle, we proceed to our task.

Our first step will be to classify the Offices, as far as possible, so as to speak of them in relation to the principles of their constitution, rather than individually. All the existing Offices (with the exception of one or two, which will be specifically noted) may be ranged under the following three classes:—

MUTUAL.
PROPRIETARY.
MIXED.

It is not difficult to see how these distinctions originated, and how they came to be adopted in the order in which they are arranged. In early days, when the rude idea of Life Assurance was in the first stages of development, no data existed for determining the premium to be paid for any given sum payable at the death of the several members. A rate of payment had to be assumed, which all who associated in the scheme agreed to pay; age, as we have already seen, originally not being taken into account, except at the extremes; they were each to have a share in the common fund, disposable for the benefit of their personal representatives, on the occasion of their decease. Those who died early had their full share of the funds. Those who died later had to take their chance. If the fund was more than usually successful a division took place during the lifetime of the majority of the members. The members of the early Societies were always anxious for a division of the funds. Even in the old *Equitable*, at a period much later than that of which we are now speaking, the same spirit was manifested, and the Society more than once endangered thereby. In the case of this Society, however, the promptings of Mammon were fortunately repressed by the strong rebukes and convincing arguments of its able actuary, Mr. Morgan. In many of the early Societies the uncertainty of receiving the sum assured at death was only equalled by the uncertainty of the period of that catastrophe. It may be called, indeed, the "pot-luck" system. If the members did not get what they paid for, they took what they could get, as long as the funds lasted. Over and over again was the voice of warning held out to many of them, but to little purpose.* The promoters of the *Amicable*—the oldest of our existing Offices—introduced a modified, if not improved, system. They fixed each member's share in the general funds at a sum of not less than *two hundred pounds* at death. The rate of contribution was the same at all ages from 12 to 45, and the *greater part of the fund of each year was divided amongst the representatives of those who died within the year.*

Societies thus conceived and carried out could not be otherwise than *Mutual:* no element of *certainty* had yet been introduced to render them attractive as trading speculations. A later period, of which the foundation of the *Equitable* Society marks the commencement, furnished data, and placed the business of Life Assurance on a more certain footing. Still the Mutual system was preferred, and was undoubtedly best suited to the times. Of the Mutual Societies formed, however, on this improved data, the first alone remains in existence. The others have passed away, as indeed must the *Equitable*, but for the wisdom which directed its early councils. The *Amicable*, in process of time, improved its constitution, and still remains secure in its antiquity. At later periods, other Mutual Societies have been formed, and for the most part their operations have been attended with considerable success.

As soon however as sufficient data had been obtained "and the decrement of human life came to be reduced to a simple mathematical problem," so that the mutual societies could be conducted on something like a sound footing, the business became sufficiently secure for trading purposes. The public, too, in many instances, had lost money by the ill-founded mutual schemes, and were glad to obtain the element of *security* at almost any cost: hence most of the existing Companies of the last century were founded on the PROPRIETARY system—viz., that in consideration of the annual premium paid by the person assured, the proprietors of the office—the directors and shareholders—guarantee to pay a certain fixed sum on the death (or other event provided for in the contract) of the person so assured.

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* *Vide* the works of Dr. Price and Francis Baily.

The assured were exempted from all risk—they were neither to participate in the profit nor in the loss. They paid a fixed sum for definite object, and *that* must be accomplished either out of the fund of the Company, or the pockets of the shareholders. These wer indeed real trading concerns, selling assurance and insurance policie as a tradesman sells any other commodity: with this difference alway to be remembered, that as the fulfilment of a contract under a lif policy may possibly be deferred many years, the purchaser must loo to the honour and pecuniary responsibility of the person with whom he deals. A popular writer speaks of this plan as very suitable t the time; and as to the very early companies he is correct in saying that "life assurance business was as much a matter of speculation a would be a transaction in hops or foreign wheat at the present day."

Early in the present century several causes combined to produce a reactionary feeling. The disasters attending some of the earlie mutual schemes—we cannot call them societies—were unknown to the new generation which had sprung up. Further investigations into the law of mortality had shown that the rates of premium then charged were too high for the risk incurred; and the *Equitabl* Society, then rising to the height of its fame, was beginning to distribute very large profits to its members. All these causes combined to produce the reactionary feeling, which about this time showed itself in favor of the mutual principle—the last probably far more than either of the others. What was to be done? The proprietary companies could not suddenly transmute themselves into mutual ones. Many of them had large sums of money, which had been paid up by the shareholders to guarantee the liabilities incurred in the earlier years. It would have been unfair, now that the Companies were beginning to pay, to cut off the profits which the proprietors were entitled to for the risks they had run: besides some of the Companies had paid large sums of money to the Government for the charters under which they transacted their business. If a number of new mutual societies had been started, the effects of competition might have led them into errors no less fatal than those which had resulted from the ignorance of a previous age. Again we ask, what was to be done? If necessity be indeed the mother of invention, could she not give birth to an invention suited to the circumstances of the present case? She did so! A happy thought blended the two systems, and that which we now call the *mixed* principle was the result.

The Mixed principle, as its name would imply, combines the advantages of both the mutual and the proprietary offices. Companies formed on this principle have a sufficient paid-up capital to protect the early assurers from loss, and to meet the formation and management expenses without entrenching upon the necessary reserve funds. In consideration of this a portion of the profits—generally only a *small* portion—is awarded to the proprietors or shareholders, the remainder going to the assured, as in the mutual offices. The *British Commercial* was the first office founded on the mixed principle. This was in 1820. The plan rapidly grew into favor. The old Proprietary Companies have modified their constitutions, and are working upon the mixed system. The greater part of the new offices have adopted it; and as we have already said, the proportion of mixed to mutual offices is as 5 to 1; while of the proprietary offices only one or two now exist.

It requires some courage to say that we contemplate investigating the claims and advantages of these systems. The proprietary system is not without its advocates, or without its uses; but the main points of comparison lie between the other two. Every science is said to have its *vexata quæstio*, its vexed question, why not that of life assurance? This is it:—which offers the greater advantages to the assured, taking all circumstances into account? Nearly every writer, since the mixed principle has been introduced, has waged war on one side or the other. We do not intend to make a personal question of it. Our object will be fully answered if the reader gleans enough of the merits of each to draw his own conclusion. We shall, therefore, as far as practicable, leave the "great guns" to fight it out, retiring, like a general mindful of his personal safety, until the heat of the battle subsides.

A writer in the *North British Review* (Nov. 1849), from his impartiality, seems well qualified to marshal the opposing forces. He hardly keeps up the necessary distinction between absolutely proprietary offices and the mixed ones, but the context affords the clue:—

> "The *Proprietary* Companies were, in the early times of Life Assurance, in the habit of appropriating the whole profits, by which the shareholders were greatly enriched. The *Mutual* Offices, more especially those instituted during the present century, have, by their vigorous competition for business, given a check to this monopolizing system. . . . . . What competition has forced them (the Proprietary Companies) to adopt as a necessity, equity confirms and demands as a right; and any Proprietary Company which henceforth shall attempt to appropriate the profits, or a large part of them to the shareholders, will, we doubt not, find, as they ought, that they are behind the market, and must either better their terms or shut their doors. The Mutual Societies have thus established a strong claim on the gratitude of the community, their correction of the abuses of the proprietary system having given them great acceptance with the public. Still the proprietary system (as exhibited in the "Mixed" Offices) prevails in point of extent, and *if liberally carried out, possesses great advantages*. The allocation of large bonuses upon the capital stock is as indefensible in principle as it must henceforth be shortsighted in policy;—*but supposing such practices to be finally abandoned, we should say, that so far as the mere element of construction is concerned, the proprietary form is best* . . . . Our reasons for preferring the proprietary constitution (apart from the guarantee afforded by the subscribed capital) are, that it possesses several advantages in the practical working of its affairs, which a Mutual Society cannot command. The Directors (representing the shareholders principally) are more likely to act impartially in the distribution of the surplus fund among the policy-holders than the Directors of a Mutual Society, who generally represent the old policy-holders, the powerful and ruling class in all such Associations. A Proprietary Company can modify and vary the rates according to advancing information, or their own experience, or change of circumstances. A Mutual Society, on the other hand, cannot pass from an erroneous to a correct system of contribution. If they have begun upon a wrong Table they must persevere in the face of all reason and conviction. A large number of members come, at a certain point, to have a substantial and annually increasing interest in the maintenance of the erroneous hypothesis. Of course their rights under the deed of settlement are indefeasible, and so the only remedy for the evil is the forlorn one of a *felo de se*. The Society can get quit of its erroneous scale of contribution by winding up, and not otherwise."

It does not always follow that a *Mutual* Society will be unable to correct abuses which may have crept in, although in some well known instances it has proved so; but the constitutions of modern mutual offices have been so framed as to avoid some of the evils which were found to beset the earlier ones. In the following remarks from the same pen all will concur :—

> "Under the *proprietary* form the *non-participating* rates may be most largely diminished. We doubt if the advantages which they possess in this respect are sufficiently appreciated either by themselves or the public. It will perhaps come more into view in succeeding years, as one of the methods of obviating in part the difficulties of meeting the premiums which recently have produced so very large an amount of surrendered and forfeited policies. It seems pretty clear that a set of proprietors can with more safety sell assurance at a price which will barely remunerate them, than a Society whose solvency depends on the calculations proving adequate, and which ought therefore, in all cases, to charge rates undoubtedly sufficient."

Professor de Morgan (whom we are always glad to quote as an authority) is equally impartial. He says—

> "A very common security or guarantee to the public, is the announcement of a large *subscribed capital*, either paid up in whole or in part, or liable to be called for. This is equivalent to the personal security of a number of shareholders collectively making themselves answerable for the engagements of the Office up to a certain amount. *Such a provision is in itself an obvious good*; but it being remembered that this security must be paid for, it becomes a question how much it is worth, and whether it may not be bought at too high a price."

The conclusion he comes to is this :

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> "Now I take it for granted, that an Office charging premiums such as are commonly demanded, managed with prudence and economy, and successful in obtaining business, *will not ultimately need any capital at all*: first, because the premiums are such as must, in the long run, realize a profit, after paying the expenses of management, so that the only use of capital would be as a provision against extraordinary temporary fluctuation; secondly, because a sufficient supply of business renders the probability of ruinous fluctuation extremely small, and altogether beneath consideration. Now, since it is well known that the premiums are sufficient, *it follows that the only need which a commencing Insurance Office has of capital*, is for safeguard against *the early expences of management, and against failure of business*."

In like manner Mr. Samuel Brown, with his usual clearness of views and expression, points out that the capital of Proprietary Companies is chiefly useful in "giving confidence to the assurer, that the engagement made with him by the Company will be faithfully fulfilled, and that if the premiums already received, laid out at interest, be not sufficient to afford payment of his claim, he shall have this additional security, on which he may rely." He adds, "it may not be out of place here to remark, that it is a well-constituted Proprietary Office, where the premiums are adequate in themselves to cover the ordinary risks. The greatest peril which the proprietors incur is in the early infancy of the Company."*

A writer in the *Morning Herald* during the "assurance controversy," referring to the subject of capital, took this view of the question :—

> "It is moreover a great error to judge of the safety or security of any Life Office by *the amount of its* paid-up Capital, for the Mutual Societies have no capital at all, yet most of them are sound and flourishing. In reality, the more *moderate* the paid-up capital, *provided it be sufficient to secure the foundation on a sound basis*, the more the profit to assurers who participate in the returns. *Large capitals* may command *confidence*, but the charge thereon necessarily reduces the profit to be divided."

And, speaking on the position and prospects of Insurance Offices generally, but overlooking the fact that excessive expenditure is frequently a cause of failure, as well as "want of business," he expressed his opinion that—

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* Thoughts on Life Assurance, 1849.

> "Any possible injury to assured parties by the failure of such Societies must be of limited extent; first, because the liabilities would, under such circumstances, be limited, the failure being only from want of business; and, secondly, because, in the *Proprietary* or *Mixed* Institutions all such losses would have to be defrayed by the Shareholders, leaving *only the insured in the purely Mutual Societies* exposed to any such hazard, and they are generally protected by higher rates of premium, *which, in fact, are* CAPITALS IN DISGUISE."

The preceding writers have only been fencing about the question, but now comes the "tug of war." Mr. Sturrock is one of the fiercest combatants in support of mutuality. The Mutual Offices, he says, have no proprietors for whose profit a portion of the premiums payable by the assured is taken away. And, he continues :—

> "The object of these Societies is to retain among the members themselves the whole benefits arising from their premiums. It is plain that *by this method alone* the public can derive the entire advantages which the present knowledge of the science of Life Assurance can confer. That knowledge enables men of integrity and intelligence to give the community every profit which can possibly arise from Life Assurance. If any cavil can be made about the rate of premiums, none can be possibly made about the just appropriation of the accumulations, *until it can be proved that it is more beneficial for the assured to take a part, rather than the whole, of the bonuses and surpluses.*

A writer in *Chambers's Journal*—where some excellent articles on Life Assurance from time to time appear—exhibits equal mettle :—

> "The leading pretext of the Proprietary system is, that the subscribed capital affords a guarantee or security for the payment of claims, which the Mutual System lacks, and that the assured is thus compensated in safety for what he wants in money. But the hollowness of this pleading is seen in a moment, when we consider that a combination of assurers, each paying fully what science says is necessary to make good their mutual engagements, is a transaction free from all risk, in the ordinary sense of the word, and only can fail in the event of a change in the laws of nature, or such an alteration in the condition of the country (affecting the value of money,) as no kind of security would gainstand. . . . . ."

Another writer in the same quarter includes Mutual Assurance "pure and undefiled" in his moral code :—

> "The system of *Mutual Assurance*—pure and undefiled—is that which the public should for its own sake, and partly for the sake of morality also, support. It is an institution contemplating unmixed good to mankind, and where no grosser interests than those of a few officials can possibly be maintained."

Mr. Pocock, evidently believing the better part of valour to be discretion, contents himself with presenting the outline of the working of a Mutual Society, more particularly with respect to the extent of liability incurred by the members :—

> "If a *Mutual* Assurance Institution consists of 1,000 members assured for £1,000 each, every policy-holder is the assurer of 1-999th (one nine-hundred and ninety-ninth) part of £999,000, whilst he is himself assured for £1,000 by 999 other members. As the annual premiums are invariably paid in advance, if they be all computed for the whole term of life, the aggregate amount of such premiums will be more than double the sum requisite to provide for the claims, *during several years*; the annual premium for the whole term of life being on an average double the rate required for seven or even more years. Consequently, except in the event of such an extraordinary combination of adverse circumstances as would produce an extent of claims greater than double the *probable* amount, the fund accumulated from the premiums must for many years be always sufficient to provide for the claims without resorting to a call upon the members. Hence, if (as is always the case in fact) the number of policy-holders which would otherwise gradually diminish, be continually recruited by new members, it is scarcely within the limits of probability that any actual deficiency of funds should take place, or any call upon the members be required. If, again, a sufficient profit or per centage be added to the rates so as to yield a probable surplus, after providing for the claims and expenses, and *an adequate portion of such surplus be always reserved*, after the affairs of the Society shall (at periods neither too frequent nor too far distant from each other) have been accurately ascertained by strict mathematical investigation, *then there will be a continually accumulating surplus fund*, which, if the concerns of the

> Society be properly administered, will always be sufficient to provide for any extraordinary combination of adverse events, without requiring any call upon the members, or, indeed, exposing them to more than a mere liability to such call."

The author of *Principles and Practice of Life Assurance* gives credit to Proprietary Companies, for having done good service in their day and generation. He says, "When Proprietary Companies were first established, shortly after the beginning of last century, the risks of Life Assurance were very imperfectly known; and it was *natural and necessary* that the premiums demanded should be more than sufficient to meet the claims on the Company. These Offices were created by the merchants of London; and they were so wise as to found them with the view of preventing any loss occurring to them as proprietors. *In ignorance of the results of Life Assurance no other plan could be followed.*" But he *now* contends, "After the long and accurate experience of Life Assurance, the existence of Proprietary Companies is one of the perplexing anomalies of the present day. They are Institutions in which the merchants and traders of this country transact business on principles the *reverse of those they follow everywhere else* They show a singular disregard for the true value of their money, when they voluntarily seek the expensive benefits of Proprietary Offices, while they could obtain their objects elsewhere at less expense." These latter remarks only apply to Proprietary Offices charging rates of premium as high as respectably-conducted Mixed or Mutual Offices, which in several Proprietary Offices is still the case.

Mr. M'Culloch has his doubts whether the advantages of Mutual Assurance Companies are not more than balanced by the disadvantages incident to such establishments; "from the consideration that every one being a partner in the concern has not only his own life insured, but is part insurer of the lives of all other members; and may, in this capacity, should the affairs of the society get into disorder, incur some very serious responsibilities."

Mr. Erith comes boldly forward in behalf of the Mixed Offices:—*

> "The Mixed plan of Life Assurance," he says, "not only offers every security to the assuring public, but any villany in the formation of a Company under its auspices is more easily detected than under the Mutual scheme. It is most consistent with common justice; because whilst shareholders are rightly remunerated for their advance of capital as security, policy-holders share in the profits of the concern as the fitting reward of their support of that security; and thus each rewards the other upon mutual terms."

Mr. Hillman takes the same view of the superiority of Mixed Companies. He says—

> "Those who divide the largest portion (of profit) are about as valuable as the Mutual. As there is a possibility of an office, by a series of losses or indiscreet management, becoming insolvent, there is certainly an advantage (which however should not be purchased too dearly) in having another fund to fall back upon to enable it to meet its liabilities."

Mr. George Isabel Soper, in his clever little pamphlet, also lends to the Mixed Companies his indirect support:—

> "The promised advantage in Mutual Offices is the return of *all profits*, among all assurers proportionately, and the principle in that sense undoubtedly has strong recom-

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* Stray Thoughts on Life Assurance.

mendations, though we believe it is rarely, if ever, carried fully out in its strict interpretation. Almost all the *Mutual* Associations have a reserved, or what goes by the name of a guarantee, fund, which in fact is nothing more nor less *than a subscribed or pledged capital raised from advanced premiums.* Any one may be satisfied of this, who will take the trouble to compare the premium scales of the *Mutual* with those of the Proprietary Offices. He will find a very material difference, *the Mutual offices ranging in general from* 15 *to* 20 *and* 25 *per cent. higher* than the average proprietary (Mixed) scales, and that addition alone ensures a large profit of course, or large returns in the name of profit, *though they are really and truly surplus charges so returned.* It would be folly to attempt to disguise such a plain matter of fact. Such advanced rates are distinctly supported on the ground of the propriety of providing for possible contingencies. It may therefore be rightly considered as a voluntary admission that responsibility of some sort in the management, and a real or available capital are good recommendations. Is it not, in fact, an argument in favor of personal identity, and personal liability, or some such provident provision for possible contingencies? If that question be answered in the affirmative, the conviction would naturally lead to an approval of those offices, which unite the two leading principles (the Mutual and Proprietary) in one common interest and responsibility. . . . . Moreover, it is but fair to state, that such participating advantages in the combined offices, do not involve the mutual assurers in any of the proprietary responsibilities. This fact should be clearly understood, for the contrary has been represented in some publications and prospectuses which we have seen."

Mr. Sturrock, to whom we must once more refer, is not disposed to allow the advocates of the Mixed principle to have things all their own way. He says:—

"In entering a *Mixed Society* the assured confessedly joins a scheme, where he is told he will have the protection of a large capital, while he is at the same instant informed that the rates will suffice to allow him to participate in three-fourths, or four-fifths, or other portion of the profits of the Society. If Proprietary offices manage to conceal the absurdities of their announcements, the contradiction is here too apparent to avoid detection. . . . . It would not, (he concludes,) be difficult to shew that this capital, instead of being a protection, is in reality in many cases a very serious burden. If any one will take the trouble of calculating he will find that after a very short time, as compared with the expected duration of an Assurance Office—perhaps not longer than some of the Scotch Offices have already existed—the accumulated dividends paid out of the premiums to the shareholders will have abstracted a greater sum than the capital itself, which they profess to provide for the security of the assured! It is clear that the *Mutual* office having no such dividends to pay, has preserved to its members an amount equal to such capital, and which will not, like the other, operate every year as a further drain on the resources of the Society."

Let us pause here, and ask if this outlay of ammunition—of paper, ink, and type—is paid for in the result? We think it is. The reader now has before him *the whole case.* Amidst our many failings we endeavour to avoid that of partiality, or distortion of facts. We desire to hear and read *all* sides of the question, and wish others to do the same. We do not bow the knee to "Hero-worship" in the sense of placing our faith in great names, and great men, *to the exclusion of the more humble.* In the prosecution of our enquiries into the principles and practice of Life Assurance, we have discovered as much sound sense and correct appreciation of facts,—as many able views, ably expressed, and as great a desire for the furtherance of scientific truth, and the introduction of real improvements, amongst writers comparatively unknown to fame, as amongst those whose works are justly placed with the highest in literature and art; nor have we felt it at all incumbent upon us to pass them by in silence.

This question now before us is continued, under another phase, in the next chapter.

CHAPTER V.

CAPITAL, AND ITS USES.

Among the authorities quoted in the preceding Chapter, such a diversity of notions prevail with regard to the advantages or otherwise of capital, that the subject appears deserving of more minute consideration. Here, as on most other points of practice, much is to be learned by attentively studying all sides of the question. Greater unanimity prevails as to the importance of capital to young Companies, than on many other points: with respect to the older Offices, transacting Life business only, the use of capital becomes more doubtful. Commencing with Adam Smith, who wrote as a political economist, and not as an actuary, he says (*Wealth of Nations*, 5th edit., p. 146), "The trade of Insurance gives great security to the fortunes of private people, and by dividing among a great many that loss which would ruin an individual, makes it fall light and easy upon the whole Society. *In order to give the security, however, it is necessary that the insurers should have a very large capital.*"

Mr. Charles Babbage will be held as a competent authority on the other side. He says, "since the fluctuation in the price of life, arising from the natural uncertainty of its duration, is considerably less than that which occurs in the price of most commodities, a person who deals in securities dependent on lives, *requires less capital to carry on his business than one who trades to an equal extent in any other species of merchandize.*"

Neither of these writers fully reach the point. Coming to the more modern writers, "capital is required," says Mr. Pocock, "to equalize fluctuations to which Assurance Companies are liable, and which must be expected, from time to time to occur," "as well," adds Mr. Swiney, "as for the purpose of defraying the extraordinary expences of the first few years' management, whilst the *natural resources* of the Institution are being developed." Mr. Neison has expressed similar views, adding, "I shall never myself attempt to establish such an Institution without some capital." Mr. Wm. Thos. Thomson, when interrogated by the Select Committee on Assurance Associations thus:—"You consider some paid up capital, both in the case of Proprietary Offices and Mutual Offices, absolutely necessary for the purpose of defraying the preliminary expences and early contingencies of the Office?" answered emphatically, "I do!" Mr. Samuel Ingall was asked by the same committee, "Do you think that a paid-up capital, in the first instance, is indispensable to the safe establishment of Assurance Offices?" and replied, "*quite indispensable in my opinion.*" Mr. E. J. Farren considers the necessity for capital "*implied by the very nature of Assurance calculations.*"

Touching what the amount of capital should be, Mr. Finlaison says, "*No great capital* is necessary to set a-going a Life Office, *if honestly conducted*, and if the expense of management is prudently kept down." He adds, however, "It is plain that the management of a Life Office upon an extensive scale, which entails at the present day an immense amount of advertisement, cannot be conducted very cheaply; and the funds necessary for that purpose cannot come out of the premiums which are calculated to meet the claims upon the policy." Mr. Charles Ansell says, "For all purposes of Life Assurance *a large capital is certainly not necessary.*" Also adding, that "the main reason which I should have for suggesting the requirement of capital is, that it appears to me to be the *only test* for the position in society occupied by those who found such important institutions." In this latter view several others join. Mr. Charles Jellicoe would propose a paid-up capital, as a test of the *bonâ fide* intentions of the parties engaging in the undertaking "in the first place, and as some guarantee throughout the existence of the Company." And Mr. Samuel Ingall, to the following question—"Is it your opinion that it is absolutely necessary, as a test of the *bonâ fide* intentions of the parties commencing Assurance Offices, that they should be called upon to pay up a certain sum of money of their own, and which would be at stake upon the failure or success of the Society?"—answered, "*That is my decided opinion.*" Mr. Higham asserted this to be the "*only ground* on which he would ask to have it made a legislative enactment." Adding, however, "as a matter of opinion, I think it highly desirable to have a proprietary subscribed capital." "Take what amount of precaution we may (says another popular writer), an Office must, at first starting, depend upon something either of capital or guarantee. *Even a Mutual Office must raise something at the start.*"*

It was strictly in accordance with these views that the Parliamentary Committee referred to, stated in their report (after hearing the evidence of many of the above-named witnesses, and some on the other side of the question), their opinion—

> "That in the interest of the Companies themselves, as well as in that of the public, it is desirable to interpose such checks as will give a reasonable guarantee as to the *bona-fide* intentions of the promoters of such Companies. To this extent only the committee are of opinion that any interference at this stage is desirable. With this view in addition to such regulations as may be considered needful for the purposes of registration, the committee are of opinion that no new Company should be admitted to complete registration until a capital shall have been subscribed and actually paid up of at least £10,000, and which shall be invested in the public funds, under such regulations as parliament may deem fit to exact; to be considered in the double light of a test of *bona-fide* intentions on the part of the promoters, and of a security for the liabilities of the Company at its early stage of existence." (Clause 12, sec. 4.)

On the other side of the question came those who aver capital to be altogether unnecessary. These are the advocates of the purely Mutual Offices. *They* declared capital to be "a mere stalking-horse," and that "there is no instance of its ever being called into requisition."

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* *National Cyclopædia*: Art., Life Assurance.

This was written several years since, or the writer would have been acquainted with the fact that an Office established in 1824 has very recently been compelled to make a call of £75 per share to meet deficiencies in its funds, £25 per share only having been previously paid. "Were such an instance to occur," continues the same writer, "the capital would probably have been a mere trifle in comparison with the extent of the obligation." In the case referred to, we believe the un-called capital was sufficient to meet the entire deficiencies: at all events, it was sufficient to save the Office from absolute bankruptcy, and its policy-holders from loss. But this writer adds:—

> "We may go further, and say, that this capital is not only unnecessary, in consequence of the unavoidable formation of large funds from the mere payments of the assured, but, if on a large scale, it would be a positive disadvantage, as if there is any real difficulty, in the conducting of Life Assurance business, it is in the disposal of the funds. Capital for Life Assurance can, at the most, only be needed at first, while the accumulated premiums of the assured are of slender amount; but, admitting that it is ever so needed, it almost immediately becomes superfluous, and should be therefore withdrawn."*

Few of the other mutual writers have gone so far. Mr. E. Ryley contents himself by saying, "The introduction of capital into Assurance Offices has been the source of a great deal of harm, although (he adds) of a great deal of benefit also." Mr. S. Brown's chief objection to capital is, that the less it is in danger, or the more secure the shareholders are from calls, the more they obtain for its nominal use." The Messrs. Chambers, who (through their publications) have been the most strenuous advocates of mutuality, have of late considerably modified their tone. In an article in their journal, in July, 1855, they offer the following judicious remarks:—

> "In olden times the starting of a new Life Assurance Office was a rare and notable event. During the last ten years they have sprang up in scores. It seems all fair, as only in accordance with our views of unrestricted competition. Grant this There is nevertheless so small a proportion of sound business for each, that the receipts of the Office, instead of being reserved as a fund for the liquidation of claims are in many instances absorbed in payment ot salaries, advertising, and other expences. They look like concerns which have been got up merely in order to pay salaries to certain officers. *Where the plan of Assurance is a mutual one, this of course leaves the members a poor prospect.* Where there is some admixture of the proprietary plan, the danger is primarily to the shareholders, and only *secondarily to the policy-holders*"

If these views required confirmation, the circumstances which have occurred in connexion with the *Oak* and *Security* Mutual Offices, furnish it to the fullest extent.

Having viewed the subject under several aspects—first, with regard to those who deem a *large* capital necessary; next, as to what we may term the secondary influence of capital, viz.: that of securing *bonâ fide* intentions; and lastly, in relation to those who declare no capital to be necessary at all; and who, like the advocates for a very large capital, hardly sustain their case, we are led to the conclusion, that to meet the circumstances of the present day, the medium course must be adopted; and we therefore say, with Mr. Charles Babbage, who saw the important bearing of this point in relation to the constitution of future Companies, "I hope, however, that it has been clearly established in the preceding pages, that a large capital at the commencement is quite unnecessary; and that it will be conceded that in a business in which the receipts (the premiums) are paid long before any demands take place, and where consequently there can occur no losses from bad debts—*a failure can only arise by an improvident consumption of the funds*, or by employing a Table of Premiums inadequate to the risks undertaken."*

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* Vide article in *Chambers' Journal*, frequently quoted by the Mutual Offices.

Mr. M'Culloch takes an equally reasonable view of the case: "The subscribed capital and fortune of the proprietary body afford a guarantee on which the public may depend in dealing with any respectable Company, *while by receiving a share of the profits, the insured gains by the flourishing condition of the Association.*" And so likewise Mr. Samuel Brown: "In whatever way it may be invested however, it is evident that any amount of capital larger than *is absolutely necessary to render the assured safe*, in the event of their own accumulations failing them for the time, to meet a particular claim or claims, must be a drag and hindrance to the increase of their business." Dr. Farr adding almost in the same words, "It is clearly in this as in other ways, disadvantageous to employ more capital than is required to carry on the business with safety, as in proportion to its amount the rate of profit is diminished."

This last observation of Dr. Farr's, as indeed the close of Mr. Brown's, which preceded it, opens up another phase in the consideration too frequently overlooked; viz., that the capital paid up by the shareholders does not remain unproductive. The *North British Review* (before quoted) gives us the following on this point:—

> "It is quite manifest, although it is often overlooked, that if a body of proprietors get only an average rate of interest on their paid-up capital, *they do not thereby withdraw a single farthing of the surplus or profit fund arising on the payments of the assured.* They merely receive the interest which their capital has itself yielded, and it is only in so far as they draw a higher rate of interest than the average of that borne by the Company's investments, or make slump bonus additions to their paid-up stock, that they trench upon the assurance profits, and so withdraw what in a Mutual Office is divided wholly among the assured themselves."

And another writer ably follows suit:—

> "It has (he says) suited the purpose of the *young Mutual Offices* to decry capital as an incumbrance, just as if the capital were never placed out at interest!—never used as a means, and a powerful means too, of drawing business *not otherwise to be obtained!* They say,--'Look at the interest on so much capital: you, the insurers, have to provide for that before any profit can be divided.' Now, this is neither fair, nor is it true, as the capital of a Company is always invested at the highest rates of interest compatible with security; and in these days of so many unsound Insurance Companies, the public will rather prefer trusting to capital, even though it should cost something additional. But there is no reason why, if wisely used, the capital of a Company should not rather be made conducive to the prosperity of the undertaking; and the public will not easily be drawn into the belief, that the capital is put into *coffers, and kept merely to be looked at.*"

We have nothing further to add. Every point which occurs to us as bearing upon the question has been discussed, and what we hope will be considered still better, discussed impartially. Without prejudice to the existing Mutual Offices, which for the most part are admirably conducted, we think the inference as to the constitution of future Companies is most clear, and we pass on to the next chapter.

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* Babbage's *Comparative Views.*

CHAPTER VI.

DISCUSSING THE RELATIVE ADVANTAGES OF THE MUTUAL, PROPRIETARY, AND MIXED SYSTEMS.

On the general question of the relative advantages of the Mutual, Proprietary, or Mixed systems, but little more need be said. The conclusions we draw from our own experience, and from the authorities we have quoted—representing all sides of the question—are:—

First. As regards *Proprietary* Offices, by which we mean those giving no share of profits to the policy-holders, that if the rate of premium be in proportion to this curtailment of advantage, many cases arise in connexion with business where *security* at the smallest possible cost is very desirable. It must not, however, be forgotten that nearly all the Mixed and Mutual Offices have Proprietary or "non-participating" branches which meet such cases. The existing purely Proprietary Offices are the *Yorkshire* (1824), and the *Preserver* (1843). The rates of premium, however, in these cases appear to us not to be sufficiently low to compensate for the loss of participation. These Offices, having establishments to keep up, perhaps, can hardly be expected to offer terms as low as the non-participating rates of other Offices, which can work both branches at nearly one cost. Nor do they stand in any better position with respect to the non-liability of the assured, failing the success of the Office. To the above Offices might have been added, as far as its Proprietary constitution goes, the *Liverpool and London* (1836). This Office, however, although constituted as a Proprietary Company, guarantees to its policy-holders certain *fixed periodic additions* to the sums assured, and therefore in effect is classed as a *Mixed* Office. The scheme was devised solely to protect the assured.

Second. As regards the *Mutual* Offices, or the mutual system, several conditions appear to be essential to success. (1.) Honesty of purpose amongst the promoters. (2.) Extreme economy in formation and management expenses. (3.) A sufficiency of members at the time of starting to bring the mortality operations under the law of average. "As the members increase," says Mr. Brown, "the doctrine of averages will prove that the deviations from the mean number of deaths became contracted in proportion within narrower limits." All the existing *purely* Mutual Offices have been fortunate in these particulars. We say purely mutual, because it has come to be the fashion, since the idea of mutuality has again become popular, for new Offices to call themselves mutual, when in constitution they are essentially of the *Mixed* class, and in the terms of their deeds of settlement it is quite optional how long they shall so continue. This is a species of misrepresentation which the public should be alive to. But, perhaps, the most important point for assurers to look to, is that in all the Mutual Offices (with the exception of the *Scottish Provident* which adopts a peculiar mode of appropriating its surplus) the *rates of premium charged* are higher than those charged by the majority of the Mixed Offices. This excess of premium has been characterized by one of the writers recently quoted, with a considerable degree of shrewdness, as "capital in disguise," and this is really the truth. If it were the custom of Mutual Offices to divide, at given periods the *whole* of the profits amongst the members, the excess in the premiums would not be of material consequence, beyond the inconvenience at the time of paying the premiums, because the amount would be returned improved at interest. But, *in consequence of having no guarantee capital*, a Mutual Office can never safely divide *all* its profit fund: two-thirds or three-fourths are the customary proportions—the portion remaining undivided constituting, or increasing, the reserve or contingent fund.

These facts appear to have escaped the notice of many of the writers in support of the Mutual system. By others they have been noted and turned to account. Mr. Pocock has pointed it out as obvious, "That in order for such a surplus fund to be provided, *the early members* must, in fact, contribute in a much higher degree *than the subsequent members* to its accumulation." He instances the *Equitable*, observing that its large surplus capital has been derived from the unduly excessive rates of premium contributed by the early members, *the benefits of which are altogether enjoyed by others.* We are not sure that this is true of the Office in question to the extent here implied—investment in the funds when at their lowest ebb, lapsed policies, and other circumstances combined to swell the funds of this Society. But it is more or less true in all the mutual Societies, and led Mr. Pocock, as it has led others, to the conclusion that, "however much a Mutual Assurance Society may be desirable *in its maturity* it cannot be so considered *in its infancy*, as it must, in order to be safe, require of its members *a larger amount of contribution than would, under ordinary circumstances, be sufficient to provide for the claims of the assured.*"

There is one point in connection with *Mutual* Offices upon which much uncertainty prevails. The general impression is, that the members of a Mutual Society are liable to each other for the sums guaranteed under their respective policies; and this impression is founded upon the decision in the case of "Carlen *v.* Drury" (1 Ves. and B. 154), wherein the Lord Chancellor says, "I hold it quite clear that each individual is at law answerable for the whole of the debts of the concern." And more recently, in the case of "O'Brien *v.* Lord Kenyon" (6 Exch. 403), the liability of policy-holders is held to attach on the ground of participating in the profits of the Society. With the exception, however, of the old *Equitable*, all the existing

Mutual Offices have a condition in their deeds, and also in their policies, that the *funds of the Society only* shall be liable for the claims upon the Society, whether under policies or otherwise. But this clause, if it protects the private properties or fortunes of the assured in the event of the Office going wrong, must greatly detract from the element of security in the policies. In the *Mixed* Offices not only are the funds liable for all claims under their policies, but also the entire fortunes of the shareholders, the liability not being limited to the amount subscribed in shares, as in the case of other Joint Stock Companies, except Banks, where also the liability of the shareholders is unlimited.

Thirdly, as regards the *Mixed* principle, and the Offices founded thereon, we may say as a fact, and without any expression of partiality, that it has done more to popularize Life Assurance in this country than all other causes united. It combines security of performance with liberality of rates; and where sound and economic management has been exercised, we believe the Mixed Offices—at least, the *best* of them—have given to their policy-holders equal advantages with any of the Mutual Offices now existing—always excepting the *Equitable* Office, with its peculiar opportunities for creating wealth, and also taking into account—as should be done in all such comparisons—the rates of premium charged by the respective Offices. The chief reason which has enabled the Mixed Offices to compete with the Mutual ones in bonuses, and general liberality of features, may be traced to the circumstance that the former are enabled at each division of profits to distribute a larger proportion of the ascertained surplus amongst the assured than a Mutual Office ever can with safety—having their proprietary capital to fall back upon.

In detailing the advantages of the Mixed system, we are not unmindful of its defects: amongst the most prominent of which may be noted the *too large* participation, as we think, by the *shareholders* in the Mixed Companies, the proportion being in the majority of cases *one-fifth* (20 per cent.), in other cases one-fourth (25 per cent), and in several as high as *one-third* (or 33 per cent.). We hold that *one-tenth* would be amply sufficient for the risk incurred; and this reduced proportion might perhaps have the effect of curtailing that tendency to extravagance in obtaining business which we regret to see manifested in some quarters: bringing as it does the entire system of Insurance into disrepute. Several of the most successful of the English, as well as the Scotch Offices, only award to their proprietors the proportions just named, as may be seen by a reference to our "Bonus Table," to be given in a subsequent section. Another evil formerly too prevalent was that of having a larger *paid-up capital* than was really required for the purposes of the Office. Perhaps, however, of late years the tendency has been too much in the opposite direction. The only Mixed or Proprietary Office having the whole of its subscribed capital paid-up is the *Globe*. But this Office invested its capital in the funds at a period when they were very low, and thereby obtained very nearly *two millions* for *one.**

What we have above stated with reference to the liability of shareholders in *Mixed* Companies is the generally admitted law of the

* Now amalgamated with *Liverpool and London.*—Note, 1866.

subject, but we know that some of these Companies have endeavoured to evade this liability, by inserting a clause in the deed of settlement, and in the *policies*, of such a nature as to render the limitation of liability a matter of special contract. This clause is generally to the following effect:—"That the capital and funds of the said Society for the time, being undisposed of, according to the deed of settlement, shall alone be answerable for any claims under such policy, security, or contract; and that no Director or member of the said Society shall upon any account or pretence whatever, be subject or liable to any demand in respect of such policy, security, or contract, further than to pay to the funds of the Society the full amount of his obligation for the time being, in respect of his share or shares in the capital stock of the Society." The case of Hallett and others *v.* Dowdall, (21 *Law Journal*, N.S., p. 98, Q.B.) appears to confirm this view. The Judges in Error in this case held that partners or shareholders may legally stipulate amongst themselves that each one shall be responsible only to the amount subscribed for by him, and that where any person *accepts a policy with notice of this fact*, he can only recover from the shareholders the amount of their shares that may happen to be unpaid: but where a party has no such notice, the law would follow its usual course. The law as to the liability of shareholders is stated to be very accurately defined in this case.

Mr. F. G. P. Neison says, "It is a question so much debated, that I should not like to say whether a Mixed Proprietary and Mutual Company, which is the one alluded to, or a purely Mutual Company, is the more advantageous to the public. The public, indeed, look at the question chiefly with the view to get a profit out of the money they invest in the Institution: but it must be observed, that in the case of a Mutual Company, when they begin, their business is small, and although they give all their profits up to their policy-holders, it may happen that the fractional amount of the gross profits paid by a Mixed Propriety Company to its profit policy-holders, although nominally small, yet it may form a comparatively larger bonus than the *whole* amount of profits distributed amongst the assured in a Mutual Office."

Mr. E. J. Farren says of the Proprietary (Mixed) system, "I do think it is better than the Mutual, and I think it is the only one the public will eventually adopt. I have always thought so. I imagine that the opposite feeling has been a matter of misconception, which will eventually change;" Mr. Higham adding, on the same question, "I think opinions are coming round." Dr. Farr conceives "that Mutual Societies, carried on with great economy, *might be successful.*"

The weight of testimony from the authors we have quoted appears to us decidedly in favour of the *Mixed* principle, although they certainly have not been selected with this view. But there is another kind of testimony which seems more emphatically to mark the public estimation of the Mixed Offices, and that is their having issued (on the estimate already presented) *five* policies to every one issued by the Mutual Offices: a fact subscribed to even by the supporters of the latter.[*] The *cost* of the "Guarantee fund" to the assured in the Mixed Offices has been much dwelt upon. Leaving out the right of participation in the profit fund, the cost of the guarantee fund to the participating policy-holders is the difference between the interest made upon the investments and that paid to the shareholders. In some of the younger Mutual Offices we observe the practice has been introduced of raising a management or contingent fund by *Loan*, repayable by instalment over a given number of years. Here there appears great injustice, for it is not merely a question between interest received and interest paid, but the actual *principal* of the Loan is paid out of the contributions of the early members!

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[*] Messrs. Chambers, some years since, stated the proportions as more than three to one; and we have seen Mr. Samuel Brown speaking of the luck as all on the side of the Mixed Offices. Very few Mutual Offices have been of late years established.

CHAPTER VII.

EXPENSES OF MANAGEMENT.

Two other points, each having an important bearing on the practice of Life Assurance, yet remain to be disposed of. 1. The *Selection of Lives.* 2. *Expenses of Management.* Here we have lives and money again under consideration. The selection of lives is necessarily an important element in sound management. *How* important, we shall endeavour presently to define. And with regard to expenses of management, there perhaps was never greater occasion than now, for the careful consideration of this point. It is tender ground to touch upon, but its importance should outweigh all other considerations. We purpose here to give it precedence.

The materials we have at hand are comparatively scanty, and to some extent conflicting, but we hope to lay down a rule which will, in addition to being self-evident, stand the test of experience, As is our custom, we will first glance at what has been said by others on the subject. "The expenses of carrying on an Insurance Office," says Professor de Morgan, "though they vary somewhat with the amount of business, yet *do not by any means increase as fast.* In the first year of its existence, it would not be surprising if *all the premiums paid* were swallowed up by house-rents, salaries, &c., while in process of time increase of business might reduce such expenditure to 2 *per cent.* upon the yearly premiums." Mr. Samuel Brown presumes that it is "only in the early history of an Office that such a proportion as 5 per cent. would be required for expenses of management." Mr. Samuel Ingall, actuary of the *Imperial* Office, in his examination before the Select Committee on Assurance Associations, said, "If the expenses of management be more than *one-sixth* of the amount of premiums (16 per cent.) for any length of time, *the Office could not be said to be doing profitably;* and if the expenses amounted to *one-third* of the annual premiums, *I should say it was going on in a very bad way.*" These remarks he applied to Offices which had been in existence seven to ten years. Mr. Downes, actuary of the *Economic* Office, stated before the same Committee, "That from 10 to 12 per cent. of the premium, with an Office well-established, would be sufficient," and at another time, that "at the end of five years not more than the margin (loading) should have been spent in expenses." Most authorities agree that the expenses of a Mutual Office should be kept down to the lowest point.

Turning from the theory of Office expenditure to its practice, we find some startling facts. Mr. Samuel Brown informed the Select Committee of 1853 of the result of some comparisons he had instituted, between 28 new Offices and 21 old ones. In the latter the first five years' average expenses were "not more than 14 per cent. including deeds of settlement, preliminary expenses, and the expenses of all kinds of establishing the Companies." In the 28 new Societies the expenses had averaged *more than seventy-one per cent. per annum.* Mr. S. Ingall confirmed these results, so far as the young Offices were concerned with a very slight variation. He found the highest expenditure, by any one Office, was 264 per cent. on the amount of premiums and annuities received, and the lowest 30 per cent.* The expenses of the *Metropolitan* Life Office are stated to be only just over 4 per cent. per annum on the receipts, and from the commencement to average only a little over 5 per cent..† In the *Friends' Provident* Office the expenditure has been at the rate of 4½ per cent. on the nett premiums, or including agency commission, about 7½ per cent. on the gross premiums.‡ While in another Office (we believe the *Scottish Widows'* Fund) it has been stated that while the receipts in the year 1853 were £479,666 the expenditure was only £6,710, being about 1½ per cent.

Dr. Farr speaks of the expenses of the existing 150 or 180 Offices. "If the expenses of capital and of the foundation of new Companies are taken into account they probably do not amount to less than £1,000,000 a-year, and *cannot* be less than three-quarters of a million sterling;"—a sum sufficient to pay the premiums on thirty or forty millions of assurances!

Several considerations arise out of the preceding facts and opinions, without which they can hardly be reconciled or applied. When we speak of expenses of management, we refer to *all the deductions* which are made from the premiums actually paid by the policy-holders down to the time the same are invested as part of the funds of the Office. We therefore include the *agents' commission*, which forms an important item in the expenditure. Now it is more than probable that Professor de Morgan and Mr. Brown do not, in the estimates above given, include this item, while Mr. Ingall and Mr. Downes, without doubt, do include it. The *Metropolitan* Office has never paid agency commission on its business. The *Friends' Provident* Society pays an agency commission when the premiums are remitted through agents, but a large portion of its premiums are received direct from the assured. In the case of the 21 old against the 28 new Offices, as well as in the case of the 1½ per cent. expenditure, this point is to be noted: *the per centage is spread over the entire income, and not the income from premiums only*—therefore, no proper comparison can be instituted. In the older Offices which have been well managed, a considerable portion of the annual income arises from *interest on investments;* now it is manifest that the expenditure upon this source of income need not, and *ought* not, to carry anything like the proportion of expense which is properly chargeable on the premiums: indeed, in the Office calculations for the *improvement of the funds* no allowance for expenses is made.

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* Vide Parliamentary Report.

† Richard Beck's Practical Hints on Life Assurance.

‡ See *Post Magazine*, 18th December, 1856.

On the *premiums* the case is entirely different. These—as we shall see in a subsequent section specially devoted to the subject—are made up of two parts: first, the *nett sum* required by the Office to meet the risk of death—and secondly, a per centage or "loading" upon that to meet (1) *the cost of management*, (2) to form a contingent fund to meet excess of mortality or loss on investments, and (3) in a Mixed or Mutual Office to lay the foundation for a bonus fund. We have only here to do with the "loading" of the premiums as relating to the costs of management. On an average of the Offices this addition may be taken at *one-fourth*, or 25 per cent. of the premiums actually paid by the assured. Is not the fact, then, apparent to the most inexperienced that if there be only a margin of 25 *per cent. for expenses under all heads*, and that the remainder of the premium be required to meet the actual losses, which may be expected in the best managed Offices from the mortality amongst the members—is it not, we say, clear to the most simple comprehension that *the expenditure can never exceed* 25 *per cent. of the premiums received without endangering the permanent stability of the Office so transgressing!*

We are, indeed, perfectly aware that no new Office can be expected to establish a business at an expenditure not exceeding 25 per cent. of the receipts from premiums. But what course should it adopt? The answer appears a simple one. If a Mixed Office, honestly constituted, it has the paid up portion of the shares subscribed; if a Mutual Office, it has its guarantee fund raised by loan or shares; for we presume no one would in the present day attempt to found an Office without this auxiliary. Let the balance-sheet be made out at the end of each year of operations. From the premiums received deduct 25 per cent., or whatever the per centage of loading may be in each particular case. Set off the sum so deducted against the expenses of formation and management: and the balance of expenditure under these two heads charge to the paid up capital or guarantee fund. The balance of premiums annually remaining should be promptly invested at a rate of interest not less than that assumed to be realized in the construction of the Tables. The balance of the paid up capital or guarantee fund should lie at call or deposit, so as to be readily available for emergencies, and should in every respect be a distinct fund from that formed by the reserved portion of the premiums.

In the case of the premium fund, the interest realized should, of course, be added to the fund, to carry on the process of compound interest provided for in the construction of the Tables of rates. The interest realized on the capital or guarantee fund, or on the balance of it from time to time remaining, and *that only* should be paid to its subscribers. Such an arrangement would carry honesty of intention on the face of it, and would inspire confidence. If several persons combine their capital to deal in any mercantile commodity, and the speculation does not answer, on whom is the loss supposed to fall? If a number of persons combine to sell Assurance policies, and the trade does not answer—the shop does not pay its expenses—on whom should the loss fall but, as in the other case, on the promoters? In the history of Insurance Companies we frequently find that the worst paying concerns declare the largest dividends, and when the crisis arrives the original promoters are nowhere to be found: they have pocketted their dividends, sold their shares, and cleared off! To follow out our proposition: If the business was successful, the encroachments on the capital or guarantee fund would be less and less each year, until, in a few years, the turning point would arrive, and the expenses being less than 25, or the other per centage of the *gross* premiums, additions would be made to these funds until they attained their original amounts, when they could, in the case of the Mutual Offices, be repaid to the lenders, with a fair share of the profits realized, as a remuneration for the risk incurred; and, in the case of the Mixed Offices, be set apart, with other future periodic additions, regulated by the constitution of the Office, for the benefit of the shareholders.

But assume the other side of the question, as, unfortunately, modern experience entitles us to do. Assume that year by year the expenses, current and otherwise, continued to encroach upon the funds provided to meet them, when would be the proper time to bring things to a close? Does it require any consideration to answer—*When the funds so provided are exhausted!* If the proprietors or lenders determine to increase the funds the experiment will last so much the longer, but in no case should a single sixpence of the nett premium fund, and its accumulations, be encroached upon. Under such a system, and such regulations, how different would be the position of all parties, as contrasted with the plan now generally pursued of carrying on the game till the last shilling is expended, and only closing the doors when the brokers or less auspicious visitors "take stock" of those who pass in and out? Shareholders would be protected by at once knowing the extent of their loss, and thus saved the necessity of precipitate excursions to Boulogne, or to the German Baths, regardless of wind, weather, and expense. Policy-holders would no longer be compelled to seek a remedy in the Court of Chancery, as in the case of the *Amazon*, *Caxton*, *Protestant*, and a dozen others; or to quietly submit to be defrauded of the premiums they have paid, as in the case of the *Independent*, the *Tontine*, the *Reciprocal* (!), and others; to say nothing of being called upon, as in the case of the *Security* (!!) *Mutual*, not only to lose the premiums paid, but also to pay the debts of the Society by virtue of the mutual principle![*] while Directors might be spared the annoyance they now incur by reason of failure. Want of success is no disgrace: want of honour is lastingly so. Under the plan we have described the assurance fund would remain intact; and at any moment an assignment could be made to a respectable and successful office: while now, in nine cases out of ten, the transfer of business simply indicates handing over the policy-holders of one unfortunate to another equally so, but a little more daring and speculative.

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[*] Vide *Post Magazine*, 7th June, 1856.

There are, undoubtedly, in well managed offices, other sources out of which an occasional excess of expenditure can be met than that arising from the loading of the premiums. They may be thus classified: (1). By investing the funds at a higher rate of interest than that assumed in the Tables. (2.) By lapsed and surrendered policies. (3.) By the benefit arising from the *selection of lives*. This last point will be next discussed. The others, in our section on profits or "bonuses." It may be assumed that offices which exhibit no possible regard for the expenses they incur, are equally regardless of the class of lives they accept; and a consideration of the items "claims by death," in their several balance sheets, confirms this view. With respect to surplus interest on investments again these offices are at fault: for spending all their funds as they come in, they have no money to invest. On the score of lapsed policies they do better; for who would not let their policies lapse rather than sink more money in a failing concern—unless, indeed, the fatal probability of their speedily becoming claims reconciled them to the other alternative! Even under the most favourable circumstances, however, it would be impossible for a young office to realise much under these heads; certainly by no means sufficient to justify an expenditure of some 50, 60, or even 70 per cent. of the premiums, as we have seen in some cases, assuming that such a rate of expenditure was to be continued but a few years, and then gradually to become reduced. On this last point, we think Mr. Percy M. Dove, of the *Royal*, took a thoroughly business-like view when he said—referring to actuaries who *appear* to sanction such extravagance—"There are great mistakes, even among some professional men, in thinking that very large expenses, even of 50 or 60 per cent., are allowable in the first establishment of a Company, to be spread over a series of years, whereas the fact will be that a Company *beginning with such an expenditure, and getting business by its means*, will, in few instances, *have the courage to reduce to any great extent its future outlay*." Mr. Edmonds, of the *Legal and General* Office was quite right in informing the Assurance Committee (in reply to a question) that while the proportionate expenditure of an office is "continually diminishing" during the first five or ten years, "it never amounted to 82 per cent. *in any office that has succeeded*, even in the first five years." On the contrary, all those offices that have best succeeded have been the most economical at starting. An office now having an income of *half a million* per annum, spent in preliminary expenses the sum of *three hundred and seventy-five pounds eighteen shillings sterling!* In proportion as they have curtailed expenditure so have they achieved success.

We have already extended this particular section beyond the premeditated bounds. But passing on from a consideration of what the expenses of management ought to be, we arrive at another, not without its importance—it is, *how ought these expenses to be provided?* We have already explained that at present they are met by a per centage, or loading on the *nett premiums*. This, however, operates in many cases exceedingly inequitably. It would, we apprehend, be difficult to say, on office experience, that a policy for a £1,000 on a life aged 20 costs more to "manage" than one for the same amount and on the same conditions, on a life aged 60. But inasmuch as the annual premium at the latter is *three* times as much as at the former age, the latter may be said to contribute three times as much to the Office expenditure during the currency of his policy as the former, assuming the per centage of "loading" to be equal at all ages. Of course the item of "agent's commission," on the present system of a per centage on the premiums is heavier, but this is a mere matter of arrangement between the Office and the Agent, and any modification of the system could be made to include a proper adjustment of this point. The question has not escaped the attention of actuaries, although at present it has not been practically taken up. Professor de Morgan says, "the yearly contribution of every member to this fund ought to be the same." Mr. Higham, of the *Royal Exchange*, replies—"to tax all policies alike would be to prohibit small assurances;" adding, "I think the yearly contribution of every member to the fund for expenses ought to be the same per centage *on the amount of his assurance*," and suggesting *five shillings* per cent. per annum on the sum assured as "about the amount required by an Office of average magnitude." Mr. T. R. Edmonds also named the same sum.

Mr. Jellicoe speaks of the present system as "an arrangement which is quite inconsistent with either justice or propriety; since putting apart the item of commission, there is no reason whatever why each of the assured in a given sum should not make the same contribution to the annual surplus and expenses, whether likely to be called to do so for a short period, or for many years to come."*

We think this plan would be an improvement; but even to it it might be replied, that a policy for £2,000 costs no more to carry through the Office books than a policy for £200, although the agency commission, stamps, and perhaps medical fee might be greater. But we do not intend to dwell further on the point. It is possible, in the distribution of profits, to remedy very many of such seeming inequalities, and in some Offices this case is met. These points will come again indirectly before us in our chapter on "Bonuses," and the "Selection of an Office."

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* Vide *Assurance Magazine*, Vol. ii., p. 336

CHAPTER VIII.

SELECTION OF LIVES.

The heavy pecuniary engagements of Life Assurance Offices depending almost solely on the contingency of death, it is obvious that the selection of healthy lives, on which to base their contracts becomes a very important, indeed, a primary, consideration. To those unacquainted with the practice of Life Assurance it might indeed appear, that inasmuch as the rates of premium are deduced from Mortality Tables, founded on observations of the mortality of the entire kingdom—the young and old—the weak and the strong—the diseased and the most robust—that it would be sufficient for the safety of the Office if a fair average of all these classes could be brought to contribute to, and participate in its funds—*and so it would*, if only this fair average could be secured! Here the difficulty hinges; but we have already to some extent prepared the way for its solution. In our chapter upon longevity we have shewn the ill effects of undue mental exertions and excitement as against bodily occupations; and in our general notes on mortality, we have shewn the ill effects of town as against country residence. Now to what class do the bulk of assured lives belong, and, for the most part, where do they dwell? To the first part of the question the answer is, that from amongst the professional and the trading classes—those who are borne down, too frequently, by the mental anxieties of their callings—becoming old men even in their youth—is drawn the great body of Life Assurers. These classes, by very necessity, must reside near the "busy haunts of men"—in bustling towns and pent-up cities—many of them in dismal chambers and ill-ventilated counting-houses; places to which a wholesome atmosphere becomes a stranger, and the sun's rays never penetrate! It is against evils such as these selection has to combat. We have given numerous authentic instances of persons who, in this country, have lived to ages considerably over a century. We can put our hands on thousands of cases where a hundred years has been the limit—but was ever an assured life known to die at such an advanced age? We believe not. Those who have hitherto attained to those ages have been persons of the humbler ranks of life. Agricultural labourers, gardeners, fishermen, and of similar occupations, and these are not the class of lives Offices are called upon to assure. Let us look to the records of the Offices. The *Amicable* Society has assured lives for a period of 150 years, but the oldest life on its books died at 97! The *Pelican* Office in 60 years has lost one life at the me age. The *Royal Exchange*, in 135 years, has no experience eyond the age of 96; the *London Assurance*, during the same eriod, can only reach to 90. The *Equitable*, in a century, furnishes no case beyond 95; the *Albion*, in half a century, stops at the same point. The *Rock*, in a like period, paid on its oldest life at 94; the *Union* and the *Imperial* the same. The *Sun* has no experience in lives beyond 92; the *Atlas* and the *Law* Life stop at the same point. Yet how is it? In *Annuity* and *Tontine* Societies we hear of no such transient limits! It is not many years since Mary Benton, a nominee in a Tontine at Perth, died at the venerable age of 122; while, but last year, Miss Cunningham, nominee in the same Tontine, died at Edinburgh at 107. But here the opposite conditions prevail: peace of mind by reason of easy circumstances, and at least in one case, a country instead of town life. For other statistics on the longevity of annuitants, see page 132.

It is, perhaps, impossible to trace all the causes which operate in these opposite directions: but we have the fact, in addition to the foregoing incidents, that Mortality Tables which have been constructed upon the recorded experience of assured life—with the benefit of selection—shew results no more favourable to human life on an average of ages than those deduced from the general mortality of the kingdom —vide the *Equitable*, *Amicable*, and *Experience* Tables already published. What the result might be, *in the absence of selection*, we cannot say, the experiment, to our knowledge, not having been tried; but reasoning upon the facts already before us, and the authorities we have to cite, we should suppose it would be fatal to the success of any Office that might hazard a trial. The great founder of the English Offices, Dr. Price, clearly anticipated such a state of things as above indicated. "Those persons," he says, "will be most for flying to these establishments who have feeble constitutions, or are subject to distempers which they know *render their lives particularly precarious; and it is to be feared that no caution will be sufficient to prevent all danger from hence.*" And herein he solved the enigma.

Mr. Morgan, in one of his addresses to the Court of the *Equitable* Society, spoke of "selection" as a "perpetual source of profit." In his preface to the Tables of the Experience of the *Equitable* Society, he enters more fully upon the question:—"In a body of lives of the same age, all selected as healthy from the general mass of mankind, it is obvious that the rate of mortality must be considerably less *for the first ten or twenty years after selection than amongst those from whom they are thus chosen.* As, however, these selected lives advance in age, their general health, and the rate of mortality amongst them, will naturally approximate to the common standard. This approximation cannot be accurately estimated, if the observations be take from a blended mass of lives." Subsequent writers have noted th last point, and prepared Tables based on observations upon *class of lives* assured at the same age. The results will be referred to we proceed.

Mr. Charles Ansell said, before the Select Committee, "I sho think the mode in which lives are selected, as it is admirably tern that is the care taken in accepting none but desirable lives, *is an exceedingly important element; and the best calculated scale of premiums in the world would not make an Institution safe that is careless in accepting all the lives that are brought to it.*" Mr. J. J. Downes cautions us against putting too much faith in the benefit of selection. "It is supposed," he says, "that people coming into an Assurance Office are so selected that they will not die for a considerable time: now, that is not the case; we find people die in the first year of their assurance, and that is as likely to happen in one Office as another." Mr. T. R. Edmonds speaks of a very large element of the safety of a Life Office, depending "on the way in which the lives have been selected," adding, however, that the value of selection "is always diminishing, *and is of very little value in the case of policies which have endured more than ten years;* they become the average lives, their mortality being very nearly the mortality of male lives among the general population at the same ages." These conflicting opinions point out the necessity for further investigation.

Dr. Farr, who throws an interest into all subjects of this class upon which he touches, gives us some information on this point:—

> "The Selection of Lives," he says, "is not yet fully understood, but it may be broadly stated that 27 in 1000 men of the population of the age of 20 and under 60 are suffering from some kind of disease or other; that several of the diseases are of long duration, that others are recurrent, and that some are hereditary; that consumption, the most common fatal disease, lasts on an average two years, although it varies considerably in duration; and that cancer, another form of chronic fatal disease, is much more common in women than it is in men. On all these grounds it is clear that selection will diminish the mortality in the first year or two, or three or four years subsequent to its exercise. *As the age of persons assuring advances the influence of selection increases*, and in this way it is stated that a former Government incurred heavy losses by the sale of Life Annuities on old lives to unscrupulous spectators."*

And in another place he adds, that—

> "Any advantage an Office may secure by the operation of selection may be set down as legitimate profit. If some skill be not applied in selection the mor.ality of assured lives *will be above the average of the nation, and the result less.*"

Mr. Samuel Brown, also a competent authority, speaking of the profits arising from the mortality being less than that expected under the Table of Mortality adopted, points out that *this is not a permanent source of profit:—*

> "The Selection of Lives," he says, "tends to bring together a body of individuals in a higher state of health, and consequently exhibiting a less mortality at any given age for some years after selection than would be experienced in the general mass of the nation. Young Offices, therefore, frequently declare bonuses which they cannot hope to maintain; and whilst the members' 'expectations' have been excited, and their desire for gain stimulated by the auspicious commencement, at each succeeding division this source of profit will be diminished, till at last *the balance will be entirely on the other side*. The surviving members, who have been too sanguine in their hopes, and have divided amongst themselves and their deceased co-partners, the provision which ought to have been made for a mortality which must necessarily increase with the age of the Office, will, with reluctance, have to refund part of their too early acquired gains; or what will be equally detrimental to the success of the Company, fall back for assistance on the proprietary body where any such exists." Again, "The general tendency of selection cannot be mistaken, and it is universally found that if the mortality in the first few years be less, it increases very rapidly after a short period."

This point, which is one of great importance, is further illustrated by some comparative Tables of the duration of life amongst the neral public at various ages between 30 and 65, and the duration *selected* lives at various corresponding ages. The result shows that hile the mortality among persons *assuring* at the age of 45 was only ust over 1 per cent., the mortality amongst persons who had assured t the age of 30, and had continued assured up to the age of 45, was early *one and three quarters* per cent.

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* Vide Twelfth Report of the Registrar-General.

> "It follows," says Mr. Brown, "that in a Society newly established, where 185 deaths had been expected, reckoned upon between the ages of 45 and 50, and on taking a valuation in the first five years, it was discovered that only 109 deaths had actually occurred, if the directors or members, who had not looked on the subject in the light which it is here presented, should insist upon a division of all the funds which had been accumulated to pay this difference in the number of the claims, they would be acting against the interests and future stability of the Company: for how would they be able to meet the claims arising from the increased mortality between the same ages after 15 years' existence. . . . . . . This point must be carefullly distinguished from the expected increase of claims which arises from the advancing age of the members. *These* are duly provided for by the premiums, where they are adequate in the first instance, and properly improved afterwards. The distinction is most important."

Mr. W. Morgan, again, in 1829, after fifty years' experience as actuary of the *Equitable* Office, thus expresses himself:—

> "Between a number of select lives and the general of mankind the difference in the rate of mortality will, *at first, be considerably in favour of the former;* but this difference will be continually lessening, till, *in process of time, it will vanish altogether*, as it is found to have done, among the lives of long standing in the *Equitable* Society. Should any Institution, therefore, of this kind, in the early period of its existence be tempted, by the high probability of life among its members, either to reduce its premiums or to adopt any other violent measures for impairing its resources, the consequences, though not immediate, must ultimately terminate in disappointment and ruin." [*]

Dr. Milne (the compiler of the Carlisle Table) after much experience, observes:—

> "Although the members of such a Society (as the *Equitable*) when they first enter are select lives, they are not *even then* so much better than the common average as many persons suppose; for the more precarious a life is, the stronger is the inducement for parties interested in its continuance to get it insured, so that bad risks are frequently offered to such Companies. And many proposals for insurance are accepted by the Directors that are thought very eligible at the time, in cases where they are not aware of any specific objection to the life proposed. Besides, it is to be considered that of the number in a Society at any one time but a small proportion can have been recently admitted, and in a few years from the time of admission *the members* will generally have come down to the *common average of persons of the same ages*."[†]

Mr. T. R. Edmonds follows in the same strain: "Assured lives represent a better class of lives than the average, and that superiority is probably greatest in the first few years, and it gradually diminishes. From the *Equitable* and *Amicable* experiences," he adds, "including the first five years of membership, the result of the total observations on assured lives agrees closely with the last observations of the Registrar-General, on the total male population of England for the seven years ending 1844."

The observations on which Mr. Edmonds bases his conclusions, extend, in the case of the *Equitable* Society, over a period of 66 years preceding 1829; those of the *Amicable* Society over 33 years preceding 1841. In the case of the *Economic* Society, the recent investigations extend over a period of 32 years, viz., from 1st June, 1823, to 31st December, 1855, and shew results more favourable than any heretofore deduced from assured life, the mortality having been only 90 per cent. of the *Equitable* Experience, 94 of the *Carlisle* Table, 95 of the *Experience* Table, and but 58 of the *Northampton* Table! It must, however, be remembered that this latter Office is a rapidly increasing one, and that, therefore, the benefit of selection over a large number of lives accepted, during the last five or six years, has to be taken into account in the comparison. Speaking generally of the experience of that Office, the mortality of all ages up to 52 has been less than expected by the Tables;* from 52 to 71 greater; and at higher ages equal.

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[*] *A View of the Rise and Progress of the Equitable Society*, by W. Morgan, p. 46.

[†] Human mortality, Encyclopædia Britannica.

The results from the *Equitable* and *Amicable* Tables, as arranged by Mr. Edmonds, shew a mortality of 50 per cent. greater amongst lives some time selected than amongst those of recent selection; or, as he terms it, between "ancient" and "modern" selected lives. Referring to some Tables he had prepared, he says, "It will be seen that in the *Equitable*, between the ages of 40 and 45, the mortality among those who have been members less than five years, is 465 out of 10,000; among those who have been members for more than 15 years, 777 die of 10,000 in five years, being a *difference* of full 50 per cent. The figures which follow at succeeding ages are nearly the same, and such is the case in the *Amicable*."†

Mr. E. J. Farren, who has also paid considerable attention to this subject, has furnished the following Table of the mortality per 1,000 at five ages amongst assured lives, as compared with the general population:—

Age.	Among Assured Lives.		Among the general male population of England.
	First Year.	First and subsequent years.	
30	6⅓	8¾	10¼
40	8⅓	10¾	13¼
50	14½	16⅓	17
60	28⅓	31	31⅙
70	54⅓	62½	67

After enumerating the influence of selection over the first year, Mr. Farren concludes that the rates of mortality of persons insured, "would not particularly differ from those prevailing among the male population at large, taken indiscriminately without regard to health."

Mr. Higham, by another road, has arrived at similar conclusions with the preceding writers. His investigations have been directed more especially to *selection as exercised by the policy-holders against Assurance Companies*. As the result, he shows *that the majority of lapsed policies are on the best class of lives*—diseased policy-holders being always anxious to retain their policies:—

"One is struck," he says, "with the fact that assured lives are, for some time after selection, much better than the community at large, *but that after awhile they become*

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* The *Economic* is founded on a Table deduced from Finlaison's Table (Males), the *Equitable* Experience, and *Carlisle* Table. "It is a Table," says Mr. Downes, the actuary of the Office, "better graduated, more mathematically symmetrical, than either of the other Tables."

† Vide Report of Select Committee.

> *much worse.* If the comparison be made with a Table representing the chances of life in the *better classes of society*, to which assured lives generally belong, their inferiority after a short period of assurance *will be still more strongly exhibited.* There can be nothing," he says, "in their constitution or circumstancesto account for this; and it can arise from no other cause *than the selection which the assured exercise against the Company* by dropping policies on healthy lives, and retaining those on lives which have become bad or doubtful. Various writers, who have noticed the inferiority of insured lives taken in the mass, have hastily concluded that the care which the Companies exercise in the admission of applicants fails in its purpose, through the incompleteness of the information, and the occasional success of dishonest speculators. But," he continues, "if this were so it would be apparent from the outset, whereas in the early years after entry the reverse is the case. I conclude, therefore, that if we could trace the after-history of *all* who appear upon our books, we should find that they really were, as a whole, the select lives we supposed them to be on admission; that those who dropped their policies were those who permanently enjoyed good health, while those who had fallen into bad health were careful to retain them."

Dr. Farr has clearly arrived at similar conclusions. He said, in his evidence before the select committee:—

> "A man in leaving an Office has this advantage, that he exercises a certain option in this way: if he is in ill-health he continues attached to the Office. He only leaves the Office if he is in good health, consequently *it gives the Office an advantage, and raises the state of health if the members continue in all cases attached to the Society.*"

Whether all the considerations which attach to this portion of the practice of Life Assurance have been touched upon, we can hardly say. It is particularly desirable that agents should have correct notions of the importance of "selection" in the conduct of an Office, as there is no point upon which they so frequently come in collision with the "powers that be." Every agent is naturally (and generally apart from mere considerations of commission) desirous that the lives he submits to the Office he represents should be accepted, and at the ordinary rates: they being for the most part from among his relatives or personal acquaintance, to whom it is exceedingly unpleasant to have to communicate the fact of rejection, or even of having been "put up" in the rates. But in all well managed Offices, unless the agents be well up in their business, such occurrences are very frequent, arising not from any disregard to the extension of business—a fact made patent by the expenditure which most Offices incur to secure it—but simply from a knowledge, that unless the lives proposed be at least up to the standard of the Mortality Table adopted, the acceptance would lead to the annihilation of all profits, if not ultimately of the Office itself. Such are the arguments which might be lithographed on all circulars announcing the fearful edict of a life being "declined."

But this is not the only lesson the agent may draw from the considerations presented in this chapter. Next to the annoyance occasioned by the refusal of a life, is that attending the surrender of a policy. We will not suppose any agent so unreasonable as to participate in a belief often expressed by policy-holders, on desiring to surrender, that *all premiums* paid upon that particular policy has been so much gain to the Office. If that theory were applied to *all the policies in any particular Office*, from what source would the claims and expences be provided? The absurdity of the notion constitutes its best refutation. Every premium received indicates a corresponding, and, we may add, a *current* liability in respect of *some* of the existing policies.

When, therefore, a policy-holder wishes to surrender, *this* circumstance has to be taken into account. The point we are now referring to, however, is that of the selection which in all such cases appears to be exercised against the Office, and which, if full reliance be placed upon the authorities already quoted, is almost sufficient to deter Directors from offering any surrender value at all. We are not advocating a course of illiberality: for this would, generally speaking, be retaliated upon the Office by loss of business—indeed we shall presently enumerate liberality in this particular as one of the improvements in the practice of Life Assurance. We are simply pointing out the fact, that inasmuch as theory indicates that the best lives only surrender their policies to the Office, this fact should account for the apparent indifference of Offices to purchase their policies.

Without pursuing this point further, we may all agree with Mr. Higham, that it "is one deserving of very serious consideration, *especially by those who are accustomed to regard lapsed assurances as a source of profit.* It might," he says, "be so if the policies to be dropped *were settled by lot;* but seeing that a power of selection is exercised in opposition to the interests of the Company, there is every reason to fear *that a loss instead of a gain is the result.* It is true, a measure of profit is shown upon the *immediate* transaction, inasmuch as the Company are enabled to dispose of their reserve in respect of the policies surrendered. But this is so obviously done at the expense of the future, *that one can hardly hear a Company congratulating themselves on their large profits from discontinued policies, without being reminded of the man in the fable, who cut open the goose to secure the golden eggs.*"

Passing on to another phase of the question, the desirability, or otherwise, of the present mode of selection, has been much discussed by several modern writers. Those who object to the method now in practice say, that a very large number of assurable lives are lost to the great majority of Offices. Of course the "diseased," "impaired," and "declined" Offices, now so constantly brought before us, have to some extent remedied the evil.

"Formerly," says Mr. E. J. Farren, "the assurance of lives not considered select, was scouted. It was considered unjustifiable to take lives not in perfect health; but now even the oldest Companies have virtually given this distinction up, because they declare bonuses without reference to health."

Mr. Scratchley says, by the present system, "the number of assurable lives is greatly contracted, and many persons who, in the long run, do not die before their time, are debarred from the benefits of Life Assurance. *So restricted a system is unnecessary*, for, if a scale of increased rates were deduced from observations of an extensive average of each disease, and applied by a skilful medical officer as a guide *in each particular case, then a large number of apparently unimpaired lives,* we believe, might be assured, who would be found to yield a return less productive of loss to the Society, than a similar number of strong persons (assured at ordinary rates) whose self-security in the possession of health renders them indifferent and careless of precautions. The old saying," he adds, "of a creaking door lasting longer on its hinges, is, by the experience of Assurance Companies, found to be true." He thus concludes his remarks on the subject:—"We urge, therefore, that the field of assurance should no longer be limited; that inasmuch as Life Assurance is merely the result of judicious money measurement of the contingencies of human existence, the system may safely be extended; that attempts should be made to determine a proper charge for the general assurance of lives, however apparently they may have departed from the assumed standard of average good health. *If this were done, we should cease to meet with aged persons, who tell us of their having been declined by such an Office when young.*" This, however, is a point of consideration for the Offices rather than for ourselves, and to them we leave it.

As one of the advantages arising from selection of lives, we may refer to a fact on the authority of Dr. Brinton, a physician of eminence and examiner to the *Mutual* Life Office, that the deaths from consumption amongst assured lives does not exceed one-tenth of the average of such deaths among the whole population, as shewn by the Registrar-General's returns. We may also note here that the risk of death from consumption decreases with advancing age. Dr. Brinton estimates that at 40 half the danger is over; and at 50 three-fourths in the male, and four-fifths in the female. At 60 but one-fourteenth remains even in the male, in whom the liability throughout the whole of life is almost one-fourth greater than in the female (5 to 4).

During the last year or two more attention has been directed to the duties of medical examiners of Life Offices, and several able pamphlets have appeared. We may mention one by Mr. William Hannam, and another by Dr. Brinton.

Weight is a point to which Dr. Brinton attaches some importance He lays it down as a rule, that an adult male in good health, 66 inches in stature, *ought to weigh* rather more than 10 stone, or 140 pounds avoirdupois; and that for every inch above or below this height we may respectively add or subtract about five pounds. Towards the close of early adult life, he remarks, corpulence generally increases.

On the subject of *insanity*, he remarks, that all researches into the mortality of lunatics conclusively show that *their* probabilities of life are much less than those of some persons at corresponding ages; especially from the frequency with which such unhappy persons commit suicide; and the numberless chances of accident, privations, or exposure, to which the state of their intellect renders them liable.

It is true we frequently hear of lunatics dying at advanced ages, but the proportion of these is very small.

The points we have noted are those of paramount importance in regard to selection for Life Assurance.

CHAPTER IX.

IMPROVEMENTS IN THE PRACTICE OF LIFE ASSURANCE.

We should hardly do justice to this division of our subject if we were to omit to notice, in some connected form, the various improvements which have from time to time been introduced into the practice of Life Assurance. Careful inquiry will, indeed, show, as we have entimated in our prface, that these are neither so numerous,nor exactly of the same character, as those of our readers who have only gleaned their information from newspaper advertisements, or the prospectuses of individual Offices, have been led to imagine. Our comparison, of course, dates from the period when Life Assurance became a science: having proper data to fall back upon; or to be more definite, we will go back to the period of the publication of the Carlisle Tables. The gradual improvements in the science have been pretty carefully noted in our historical division.

The desirability of being able to discriminate between real improvements, and those of a delusive and fallacious character, we need not stop to dwell upon. It is one of the most natural results of competition that it should lead to the assumption of all kinds of pretended advantages on the part of individual Offices. And it is one of the obvious requirements of Insurance Agents to be able to test these pretended benefits, and estimate them for what they are worth. How many agents have had to reproach themselves that, instead of leading their clients away from danger, they have, unwittingly it may be, but none the less fatally, induced them to fondle with the shadow and lose the substance? and how many more may yet do so? So long as the principle of Life Assurance can lay claim to the proud distinction of being the most extensively applicable, the most prudent, and all things taken into account, the most advantageous, of all known investments, so long will there continue to be fixed upon it all kinds of fallacious schemes for the entrapment of the unwary—and so long will those who are sincerely interested in the progress of the system have to arm themselves to grapple therewith!

We need hardly invoke the stern authority, and still sterner experience, of Mr. Taylor, the assistant-registrar of Joint-Stock Companies, to proclaim the fact, "That it is a matter of absolute certainty that an Assurance Company, founded on unsound principles, *must occasion losses at some time or other to the public*,"—yet in the all-absorbing desire for individual benefit, without regard to the probabilities of the case, how often do we see persons enlisting under the banner of the most blatant absurdities, and deriding all proferred advice to the contrary. All that we now aim at, however, is to qualify our readers to appreciate those Offices—whether old or young —which, while offering all the real and solid advantages which are consistent with stability and equity, promise only what they can fairly perform—and scrupulously perform all they promise.

To carry out this object, we shall have occasion to glance at some of the *pretended improvements* which have been introduced; and this, again, will lead us to indicate several points where we think further improvements are alike practicable and desirable.

To proceed then with the improvements already introduced, they may be classified as follows:—

1. *More Moderate Rates of Premium.*
2. *Substitution of Mixed for Proprietary or Non-Bonus Giving Offices.*
3. *Extension of the Limits of Foreign Travelling and Residence.*
4. *Modification of Conditions Regarding Deaths by Suicides.*
5. *More Liberal Conditions Regarding Surrendered and Lapsed Policies*
6. *Application of Assurance to Diseased Lives.*
7. *Increasing and Decreasing Rates of Premiums.*
8. *Allowing Portions of Premium to Remain at Credit in Exceptional Cases*
9. *Loans on Policies for Keeping them in Force.*
10. *More Prompt Settlement of Claims.*

I. AND II. MODERATE RATES OF PREMIUM;—NON-BONUS GIVING OFFICES.

The advantages resulting to assurers from the almost general adoption of more moderate rates of premium, and the gradual substitution of Offices giving a share of profits to policy-holders, in the place of some of the earlier Offices which charged extortionate rates and gave no return, are so obvious that we need say nothing more upon these heads than will be found in various passages throughout this work.

III. EXTENSION OF THE LIMITS OF FOREIGN RESIDENCE.

The extension of the limits allowed for travelling and residence in foreign countries, is a great advantage to nearly all classes of assurers. The number of persons who are called upon to travel to or reside in foreign countries is increasing yearly with the growth of commerce: while the number who seek foreign climes for recreation and instruction is increasing with the facilities of travelling, and the cultivation of the fine arts. Some idea of the extent of the former class may be gleaned from some statistics in our chapter on the Census: as to the latter class, March is a month generally anything but inviting to travellers. The figures at page 113 may, therefore, be considered almost at the minimum; for, the events of 1851 tended to draw people to, rather than away from, England.

Formerly these limits were so prescribed that policies became forfeited almost before people knew they had transgressed: or if permission was applied, the extra premium demanded was such as to amount almost to an annihilation of the value of the policy. It is not such a very many years since the *Norwich Union* Office announced in its prospectus, "No extra premium is demanded for sea-risk for the passage between Dover and Calais, or for that between Holyhead and Dublin, *provided such passage be taken on board his Majesty's regular packets!*" With improvements in steam navigation these restrictions became abolished, and it became customary with the Life Offices to allow the assured to pass in decked vessels or steam packets, not only to the Channel Islands and the Isles of Sark and Man, but in time of peace to the several ports in the English Channel, the Bay of Biscay, the German Ocean, &c. &c., the most general limits being between Texel, at the extremity of Holland, on the north, and the French port of Brest, on the south; and to the present day some of the older Offices continue these as their limits. These regulations were originally founded upon a belief in the uncertainty of risk arising from a change of climate; the extent of this risk not being understood formerly as well as it is at the present time.

But the extension of limits just pointed out by no means meet the requirements of the case; and of this fact many of the best conducted Offices are fast becoming cognizant. Hence we find some of these Offices allowing their assured to travel to, or reside in, any part of British North America; while several established Companies are going still further, and allowing residence in Australia and California (the gold regions in each case most particularly excepted!); also in New Zealand, and, indeed, in any part of the world, north of about (varying with the Office) 38 degrees of north latitude, and south of 30 degrees of south latitude; and it is but fair to state, that the Scotch Offices have been foremost in these liberal arrangements.

In most of the cases last-named permission must be had of the Office, and in some instances the "sea risk" of some few shillings per cent. has to be paid by the assured.

The advantages of these arrangements are, perhaps, more apparent in cases where policies are held under assignment, and where forfeiture of the policy would follow if the life assured trespassed beyond the limits. In these days of emigration it is by no means unusual—in fact, it has come to be rather customary, with those who have not succeeded as they could desire in this country, to try their fortunes in other quarters of the globe. In such cases the lives are not unfrequently assured for the benefit of creditors, and anything which tends to give increased security is of real commercial advantage.

Of course, in such transactions, the odds must not be all against the Offices: hence the mode of conveyance at sea is limited to decked vessels and steamers, and there is generally a condition restricting such foreign travel to times of peace,—that being understood, in its general sense, to imply peace between this country and the country named as the destination, but it is clear that it must also imply peace between the intervening countries (or on the seas) proposed to be traversed. And such advantages as those enumerated are very properly limited to *bonâ fide* holders of the policies.

In most cases, also, where the limits of travel or residence have been transgressed unintentionally, upon notice being given immediately the discovery of the fact, either by the assured or the holder of the licy, the Office will fix the proper rate for the risk incurred, and so revent the policy from forfeiture.

The last point to notice under this head is the introduction of 'whole-world-policies." Under these, by payment of a fixed extra premium, the assured may travel to, or reside in, any part of the world without risk of forfeiture. In order, however, to obtain such policies, the assured has to declare that, at the time of taking out the assurance, he has no intention of residing beyond the limits ordinarily allowed. Several Offices grant them only after a certain number of years of membership. These policies were introduced, also, by the Scotch Offices, but we observe several of the English Offices are adopting them.

IV. SUICIDES.

Formerly, in the event of an assured life dying by suicide (as also by duelling, or the hands of justice), all interest in the policy was lost to the family or personal representative of the person so dying; although in the case of a person holding under a *bonâ fide* assignment, death from these causes, very properly, would not invalidate the policy, provided notice of assignment had been given to the Office previous to the death. The improvement we have to note here is that some of the Offices—we think we may say the majority of them—are beginning to pay at least some consideration to the unfortunate families of persons dying by suicide, and that the advantage is no longer entirely in favour of strangers. The Offices we refer to undertake to pay to the family (where the policy has not been assigned) the surrender or Office value of the policy on the day before death took place. This value, as we shall hereafter see, varies considerably with the duration of the policy and the bonus additions made thereto. In all cases, such a return is a graceful expression of sympathy with the family, and in many it will come in the form of a substantial return.

This feature is capable of very useful extension.*

V. SURRENDERED AND LAPSED POLICIES.

The most permanent and also the most powerful drawback to the progress of Life Assurance has been the fear that if, in the hour of adversity, the assured should be unable to keep up his premiums, all his previous payments would be forfeited: thus not only thwarting his good intentions, but increasing his pecuniary misfortunes. Policies so forfeited are called lapsed.

Other persons would be induced to assure, providing that they were certain of meeting with liberal treatment after the immediate purpose of assuring had passed away. Or, as Dr. Farr has expressed it, "It oftens happens that persons are deterred from insuring because they lose all command over their money, which they may be able to employ more advantageously to themselves when the purposes for which they insured are accomplished." All obstacles, then, to the payment of a fair surrender value for policies proposed to be discontinued seems in the end short-sighted policy. The Offices reply that "only the *best* lives surrender," which may be true, but as even these cannot be retained in an Office by unfair usage, it is best to put a good face upon the transaction. Mr. Charles Babbage long since asked, "What is the reason for thus concealing from the public a fact with which it is essential for them to be acquainted, in order to judge of the fairness of the terms offered to them?" adding, "I believe it to be more advantageous to make the value of a policy known, and its property transferrable to the greatest extent," and in such belief we most entirely coincide. A writer in *Tait's Magazine*, referring to the past state of things, puts matters thus strongly:—"*Life* is not more uncertain to the majority of mankind than *income*, and therefore while there was no possibility of securing a portion of the premiums paid in the event of the assured being unable to continue their payments he *merely substituted one uncertainty for another.*"

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* See *Post* Mag., 7th August, 1858, p. 253.

Modern competition is now causing the Offices to do what they ought long since to have done by right. In the event now of a policy-holder being unable to continue his premiums, or being desirous of disposing of his policy, he will most likely find the Office in which he is assured, if it be a reputable one, prepared at once to give him the fair surrender value of his policy; although it must be premised that, unless a person has paid at least *three* annual premiums the Office will hardly be in a position to make much return upon any policy.

We observe now highly respectable Offices advertising themselves prepared to guarantee a return of 40 per cent. on all premiums paid upon policies of not less than three years' standing. In fact none but prudently managed Offices could afford to offer such a guarantee, as very few of the extravagant Offices have such a proportion as 40 per cent. of premiums in hand at the end of three years.

But in the place of making a return of cash we observe some of these Offices have a condition which appears infinitely better: they guarantee to give a new policy, *free of all future premiums*, for such a sum as the guaranteed return (treated as a premium paid down) will purchase; such policy also being entitled to participation in profits. As this point is important to be understood, we have drawn an example from one of the prospectuses. Suppose a person to have paid £100 in premiums, of which he is guaranteed 40 per cent. return—this gives him £40 cash. Assuming the assured to be 30 years of age at the time of such an arrangement, this £40 would purchase a free policy for £100 with profits periodically to be added during the life of the assured: so that he would have a *free policy* for precisely the same amount as he had paid in premiums, and hence would sustain no actual loss. Of course the amount of the free policy will vary with the age of the assured, and the duration of the former policy, and also the conditions of the particular Office assured in. We simply give the above figures as a practical example.

With respect to policies which lapse by oversight, and therefore do not come within the meaning of surrendered policies, it was formerly customary to be very strict; but now we find that upon proof of good health and the payment of a small fine, the policy may be revived in some Offices at any time within three months; in others within *six* months, and in several instances even within twelve months. Such arrangements are of great importance to policy-holders, for having to take out new policies at advanced ages not only occasions an increased outlay for premiums, but occasions forfeiture of position regarding bonus-advantages.

VI. DISEASED LIVES.

The advantages resulting from the application of Life Assurance to lives either diseased, or so far impaired as not to come within acceptance, as ordinarily understood, are so apparent, that we do not intend to dwell upon them. Those Offices which especially lay themselves out for this class of business, appear to transact a considerable amount of it; and of late years many Offices have devised rates of premium to meet the more frequent classes of disease. While, however, this branch of assurance is of great value to the public, it requires much care and attention on the part of the Offices, otherwise it will end in considerable loss. Offices that do much in diseased lives, require very different Tables on which to conduct their valuations than those simply transacting ordinary Life Assurance. Such Offices arrive at maturity much earlier, and of course sustain a heavier ratio of claims in proportion to the number of lives on the books. The statistics of diseased lives will present results equally uniform with those of healthy lives; but they require specially to be studied to be understood.

In the early days of the *Equitable* Society it was customary to charge not only an addition of twenty-two per cent. on the premiums "for the extraordinary risque attending the lives of military persons," but also an extra charge of eleven per cent. on the premiums, for the "risque of small pox or gout." On the 2nd December, 1802, it was resolved "that the Directors be empowered to grant policies of assurance upon the same terms to persons who aver in their declaration that they have had the *cow pox*, as to those who aver they have had the *small pox*. But (adds the resolution) if such persons shall afterwards die of the small pox, such policy shall be void!" Happily such restrictions have been long since removed.

The merit of first introducing the assurance of diseased lives is laid claim to by two Offices, viz., the *Clerical, Medical, and General*, and the *Asylum*, both Offices established in 1824. Our investigations lead us to believe that the former Office, through its founder, Mr. Pinckard, the father of the late manager of the Office, was the first to promulgate the idea. Its Board of Directors was in fact chiefly composed of medical men, famous in the treatment of the several classes of diseases most likely to be presented to such a Company.

VII. INCREASING AND DECREASING RATES.

An increasing or *ascending* premium is one which increases at a certain yearly rate per cent., according to agreement, at stated periods of the life of the assured, as at intervals of five or seven years each, instead of remaining fixed for the whole duration of life. After the expiration of the time stipulated, usually 14 or 20 years, the premiums reach a fixed even rate, at which they continue during the remainder of the life of the assured. The design of this arrangement is to enable those who may be slowly working forwards in the world, though with every prospect of success, if time be allowed them for the exercise of their talents, to possess, at a very low rate at first, the immediate advantage of such a Life Assurance as will effectually provide for their survivors in the event of premature death. To such persons the ordinary resource has been an assurance for a term of years as regarding the smallest outlay; the rate of premium for a whole life policy being too considerable to admit of their securing an amount sufficiently large to prove an actual benefit to their families. By an increasing premium, however, the whole period of life may be at the same time that the intention of economy is perfectly fulfilled, since the highest amount of the annual payments is still lower than the rate at which a life of the same age would be assured according to the ordinary Office Tables, if the assurance were effected at the time when the fixed premium becomes payable.

A *decreasing* or *descending* premium is constituted upon the reverse of this arrangement, and is intended for the benefit of such persons as may desire to avail themselves of the activity of youth, or a season of present prosperity, by making the largest payments at the commencement of the assurance. This species of contract is also divided into fixed periods, usually consisting of five years, at the termination of each of which the premium is diminished in the various proportions exhibited in the Tables issued by the various Offices. Each plan has been productive of good, in adapting assurance to the wants of the people; and so far they range under the real improvements in Life Assurance.

VIII. HALF CREDIT SYSTEM.

The plan of allowing some portion of the premiums, generally *one-third*, or *one-half*, and hence called the "half credit" system, has some advantages, but is only admitted here in a qualified sense, as we fear the disadvantages, resulting from the indiscriminate use, or abuse, of the plan have gained the ascendancy. Exceptional cases do arise where such a plan is of immense advantage to the assured: but it should be confined to these exceptional cases. In almost every instance where a man *commences* with the half-credit system the increasing-premium plan would be found more really advantageous. The subject will be resumed again presently, so we now leave it by remarking, that many of the existing Offices which have tried the plan and have not found it answer—as, indeed, it could hardly be expected to do when indiscriminately applied—might, by proper limitations, render it serviceable to themselves and their customers.

IX. LOANS WITH LIFE ASSURANCE.

Most of the foregoing remarks would apply equally well to this section. Loans upon life policies, like credit for the premiums, should only be had in exceptional cases, and then the accommodation would become valuable. They should only as a rule be made for the purposes of keeping the policy in force. To raise money on a life policy is to mortgage a man's good intentions. The benefits under such policies are supposed to be for the widow and the orphan. If temporary pecuniary assistance be the only object of the person assuring, a life policy is not generally the most desirable form of security; although in most cases it is collaterally advantageous. We must only therefore be understood to speak of the advantage of loans in connection with Life Assurance in the limited sense of their being granted for the purpose of keeping the life policy in force, or for some equally obvious good.

X. PROMPT SETTLEMENT OF CLAIMS.

The more prompt settlement of claims we hold as a decided improvement in the right direction. Formerly it was customary for six months to intervene, not simply after death, but after *proof of death*.* Now we are glad to see the Offices coming to *three* months; and hope to see the period yet further curtailed. We are aware that some time must elapse to enable the Offices to make proper enquiries so as to protect themselves from fraud: but in these days of rapid locomotion and communication, as many weeks will now do as months were formerly required. Most Offices, indeed, will pay the money short of the stipulated time upon having a discount allowed: but where the money is required for the support of a needy family—and in such cases promptitude of settlement is *most* urgent—every pound abstracted from the fund appears to us a perversion of its proper purpose.

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* The requirements in proof of death will be fully explained hereafter.

CHAPTER X.

PRETENDED IMPROVEMENTS IN THE PRACTICE OF LIFE ASSURANCE

We now come to speak of the pretended improvements which have been introduced into the practice of Life Assurance, several of which, by reason of the prominent attention that has been drawn to them, will require to be pretty fully discussed. The subjects to be considered under this chapter may be thus arranged :—

1. *Immediate Indisputability of Policies.*
2. *The Indiscriminate use of the "Half-credit" plan.*
3. *Loans on Personal Security.*
4. *Educational Funds, Misfortune and Indigence Funds, Reading and News-rooms.*

As several of these are points in practice upon which there may be some diversity of opinion, we have taken the precaution of calling several authorities to our aid.

I. IMMEDIATE INDISPUTABILITY.

First amongst the *pretended* improvements must most assuredly be placed that of the immediate indisputability of policies. By immediate indisputability we mean the guaranteeing of policies as indisputable from the time the first premium is paid. This definition it is important to bear in mind. No doubt it is an attractive thing to have the possession of one's property guaranteed, whether it be simply an umbrella, or a watch, or a life policy. It is, indeed, a fundamental law in all civilized nations that a man's property shall be guaranteed, with one very simple, but at the same time very important proviso, namely, *that he shall have come by it honestly*. If it were not for this simple and just proviso *might* would be constantly warring against *right*: the pickpocket would be calling upon the law to aid him in retaining his gains; and the swindler would exercise his vocation with impunity! Now, those who first introduced indisputability into Insurance contracts, instead of astonishing the world by the grandeur of the idea, proclaimed to all thoughtful people how little they really knew of the business they had undertaken. When the Assurance contract was first propounded, it was seen that inasmuch as the Office lays heavy odds against the premium paid by the assured, it was of the first importance that its managers should be in possession of true representations on all material points on which the contract was based: hence the penalty of misrepresentation was made no less than the entire forfeiture of all benefits under the contract. Now if a person will calmly look at all the circumstances there is nothing very unreasonable in this. No doubt there was the fear that some disreputable Companies might act upon the letter rather than the spirit of such an understanding, and by taking advantage of unintentional errors defraud the public of their rights—and unfortunately such cases did arise. But seeing the inducements the public has, in many instances, for withholding correct information, the abuse was far more likely to be on the other side: indeed, it is not too much to assert, that where one instance can be named of a Company attempting to defraud the public, a thousand instances could be named the other way.

Lord Mansfield has well defined the relative positions of the assured and the assurer, and will be found fully to support this view:—"Insurance," he says, "is a contract on speculation, and therefore the special facts upon which the risk is to be computed lie chiefly in the knowledge of the assured only. The insurer trusts to his statements, and proceeds, *upon confidence*, that he does not keep back any circumstance within his knowledge to mislead the insurer into a belief that the circumstance does not exist. The keeping back, therefore, of such circumstance is a fraud, and the policy becomes invalid, because the risk run is really different from the risk understood and intended to be run at the time of the agreement." No one can dispute the correctness of this reasoning.

We are by no means wishing to place obstacles in the way of those who mean honestly to the Offices: it is obviously short-sighted policy to attempt this. When a person contemplates any step so important for those depending upon him as the assurance of his life, if he has correct business notions, he will not deem it time or labour ill-spent to satisfy himself correctly on all the material points affecting his family history:* and if he do this, and make his return conscientiously, he may rest perfectly satisfied hereafter; providing he has selected a respectable Office to to start with. Those who are at all conversant with the working of Life Offices need not be told that, "thousands sterling are annually paid away by the established Offices to claimants under policies in which clerical errors, accidental mis-statements, and trifling discrepancies in age are discovered only at the time of making the claims, and are then set right."† In fact, it may be broadly stated, that in the present day no Office can afford to be otherwise than liberal and equitable in these particulars: the public is, therefore, safe.

But to come nearer to the question of indisputability, it has been used as a party cry for party purposes. There was much that was popular in appearing to remove the remnant of security the Life Offices still held over their contracts, and to give the public its own way entirely. To do this effectually, however, it became necessary to conjure up all kinds of imaginable difficulties and disputations occasioned by the Offices. Pictures of desolate widows and unrelenting Directors were placed in glowing contrast—the moral being, that "we, the virtuous Offices, make no difficulties about paying—we pay everybody everything under every circumstance." It was not long before the chief of the clique of Offices which raised this cry had an opportunity of putting all its pretensions to the test; the upshot being a verdict against the Office under circumstances from which any properly constituted Society might have escaped—heavy law expenses—a lesson to the public to place no reliance in such ill-founded projects, and lasting disgrace to the Office concerned. Here the matter might have ended, but for the discovery, in other quarters, that under proper restrictions indisputability might be turned to good account.

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* "The law holds that the keeping back of any circumstances connected with the health or habits of the life assured is a fraud, and that the policy becomes, in consequence, invalid. Although the suppression should happen through mistake, without any fraudulent intention, still the Office is deceived, and the policy invalid; because the risk run is really different from the risk understood, and intended to be run at the time of the agreement."—*Vide* Beaumont on the Law of Insurance.

† Beaumont on the Law of Assurance.

The obvious objection to the immediate indisputability of policies is, that *it offers a direct inducement to fraud.* If a tradesman should suspend over his door a notice that he would not prosecute those who should succeed in passing spurious money upon him, he might fairly expect that no amount of vigilance on his part would entirely protect him from loss. If the loss fell upon him personally, perhaps no one else would have business to complain, except as against an act offensive to moral government; but if the loss was transmitted through him to his creditors, then they would have just cause to complain of the absurdity, not to say, under such circumstances, the illegality of his act. Now this brings us to the position of an Assurance Office. The surplus funds of a Mutual Office, and the greater portion of those of a Mixed Office, belong to the members, by way of return for their excess of premiums. Hence, if the Directors place these in peril by any unguarded act of their own, they commit a wrong upon the whole body of members. It is therefore no matter of special pleading to say, that the objection to immediate indisputability is, that it enables a dishonest member to rob all those who are honest. If a man, by fraudulent representations, secures a policy containing a clause to the effect that the possession of such policy shall be deemed conclusive evidence that the claim thereunder shall be paid—which is the usual condition in such policies—and that guarantee be worth any thing at all, there is an end to all fair dealing for ever thereafter. The inducements to misrepresent the facts are already, by the very nature of the contract, far too strong—is there any good and sufficient reason for increasing them? We believe not; and all who have thought much upon the subject appear to have arrived at the same conclusion.

Mr. George Isabell Soper, in his pamphlet *Life Assurance Offices: their National and Social Advantages, &c.*, takes a thoroughly practical view of the case:—

> "It is no secret that fraud on the Offices is often attempted to be practised by designing and unprincipled persons, and the occasional success of such frauds has no doubt had the natural effect of exciting suspicion, in cases where positive proof of imposition was not to be obtained. Still it can hardly be doubted that, without such positive, or clearly circumstantial evidence, it would be better for the general interests of the Office that it should pay the money than contest the case. Nevertheless, it must

> not be forgotten *that every successful imposition wrongs* the honest assurer, whose security or profits in the Mutual, and bonuses or participations in the Proprietary (Mixed) Companies are more or less affected thereby. That wrong really extends *to all who are assured in the same Office*, whatever its standing or description, *so that, in point of fact, when imposition is successfully practiced on the Office, it is practiced on the saving assured. Every individual concerned in such Office is therefore interested to detect imposition, and to see* IT EXPOSED AND PUNISHED WHEN DETECTED."

Considering, then, that it is shewn that immediate indisputability is unsound in theory and untenable in practice, it naturally occurs whether any modification of the plan may be devised free from the great bulk of the objections already pointed out; and we have no hesitation in admitting that such is the case. If a policy be obtained by means of fraud, the probabilities are that it is intended to become an early claim: hence suspicion generally attaches more particularly to policies in their earlier years. If things go on pleasantly for some time, a species of good faith becomes established between the Office and the assured; and even if any fraud was intended a combination of favourable circumstances may have warded it off. Acting upon this belief we presume, we observe a number of respectable Offices now issue policies guaranteed indisputable and unchallengeable, after they have been some *five* or *seven* years in force. This can hardly be said to imply that any policies becoming claims within these periods are to be disputed. It leaves them open to investigation, and if upon such investigation suspicions arise, the Office has only one course in justice to pursue; and that is, to protect its members and its funds.

We believe that if the Offices give way to the public notion of paying all claims, whether just or otherwise, that so far from aiding the progress of Life Assurance the tendency will be the other way. The honest will not contribute money for the benefit of the dishonest; and in the long run, the course of even-handed justice is the course of prosperity. The use of the principle of indisputability, within proper limitations, will be found productive of good. The abuse of it, as already instanced, is productive of evil, and should be discontinued.

II. THE HALF CREDIT SYSTEM.

We have already classed with the improvements in the practice of Life Assurance the feature now adopted by many respectable Offices of advancing money for the purposes of keeping their policies in force; but between that and the systematic lending of money upon policies there is all the difference in the world, and it is this latter system that we deprecate. When a man has made an effort to provide for his family by means of Life Assurance, and adversity overtakes him and cuts off his means of paying the premiums, it amounts to an act of benevolence to furnish him with aid to accomplish his purpose, even although the funds so provided must eventually come out of his own pocket. But when a man is induced to assure his life under the plea that a considerable portion of the premiums will be lent to him for the purpose, unless it be pretty clear that his financial position will ultimately admit of his discharging the obligation he incurs, and of reserving the policy for the benefit of his family, the chances are that not only will no good come out of the transaction, but that the person so induced to assure will be positively injured: hence the assurance principle will be brought into disrepute. We are writing with a knowledge of such cases before us, and they are directly chargeable to the *half-credit system.*

A popular writer, whom we have before quoted, well observes—

> "When an Office announces that it is willing to leave a part of the premium in the assurer's hands, on his paying interest for it in advance, the Office in the meanwhile holding the policy as security, what is it but enticing a person to assure for more than he can afford to do, and to borrow money for the purpose of paying the premiums? The Office may with caution make itself secure; but it throws upon the customer the strong probability of future disappointment. When the time comes for thinking of the repayment of the advances which the Office has virtually made, the assurer will frequently find himself obliged to sell that policy to the Office, which he had counted upon for the benefit of his family. Now out of the purchase money [for the policy] must be deducted the sums in arrear to the Office (upon which interest has always been paid in advance); and when the assurer comes to put his balance against what he has actually paid, he will see *that he never did a more imprudent act.* The Office is not to blame for anything, but having thrown the original offer in his way; they have only lent him money on the same terms as they would have lent it to others; and they may say, and truly, that *it was his own fault if he engaged in an imprudent speculation.* But," the writer asks in conclusion, "is it not, then, a fault to entice others to imprudence, knowing how much more easily men are induced to be imprudent than to be prudent?"*

We reiterate the enquiry, and ask the reader to reflect before he gets led away by the delusions of the "half-credit system."

Another writer takes a still more unfavourable view of the case, and shews that the system may in some instances tell not only against the assurer, but against the Office assuring. He, however, assumes that the interest upon the premiums left at credit is to be allowed to accumulate, in addition to the premiums, thus putting the calculation upon compound interest. This is not generally the plan pursued, as in most cases the interest on the portion of the premium remaining at credit has to be paid in advance when the other portion of the premium is paid. This does not really improve the position of the assurer, for in process of time the interest upon the arrears will amount to as much as would make up the full premium, and still there is a heavy charge on the policy in the shape of arrears. In such a case the position of the Office is better than that shown in the following example, whatever the position of the assurer may be. But the writer must state his own case:—

> "Amongst the many blatant absurdities, which at the present day are offered as baits for business, we do not hesitate to place very prominently in the list the scheme of allowing a portion (often a very large one) of the premiums to stand over at compound interest until death. A very brief example of the operation of this apparent boon, as regards the individual who really intends to effect an assurance, will convince him that it will be in the last degree impolitic in him to accept the offer, and an equally brief example of its operation, as it affects a Society when a merely commercial assurance is intended, will, we imagine, satisfy any thinking person of the probably dangerous consequences to which it leads. First, as regards the assurer. A party, aged about eight-and-thirty, would, at the generality of Offices, be required to pay an annual premium of about £3 per cent. for the assurance of his life—assume the assurance to be for £1,000, and it would seem to the assurer no small boon were the Office to consent to receive from him £10 per annum only, instead of £30 per annum—the difference to be charged at compound interest on his policy, and deducted at his death. Now, should the Office charge him (as many do) £5 per cent., in the course of about five-and-twenty years the astonished assurer, who had, as he imagined, provided for his wife and children, would be informed that his policy had wholly vanished!—*his* debt to the

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* National Cyclopædia.

Office, for premiums in arrear, having, by that time, amounted to the sum assured! Now, as regards the mischief (if any) to the Office it would seem, at a hasty glance, that if this plan be injurious to the assurer, it must, *econtra.* be advantageous to the Office, but it is not so: like the assagai of the savage, it carries poison at both ends. We have taken the example of the father who assures his life for the benefit of his family, and we will now take the case of a creditor, who assures his debtor's life for his own protection. If the debt is to be repaid in five or seven years, it is far cheaper to take a policy for the whole term of life on the mischievous principle we have been discussing, in the proportion of about 2 to 3, than to effect a merely temporary assurance, more especially as when the debt is paid the creditor may, if the life assured is then impaired in health, keep up the policy by merely paying up arrears. As a general principle, no more of any premium should be allowed to fall into arrear than the difference between the premium for the whole of life and the temporary premium, *and this is not always safe!*"[*]

Mr. Scratchley also, with great shew of reason, takes side against those who believe the half-credit system to be highly profitable to the Offices adopting it:—

"This system," he says, "is now very generally in use; *but we desire to caution the Directors of Companies against misconception of the advantages, which their institution may derive from it.* They should understand that they cannot allow its application. 1st, unless the half premiums paid, added to the interest on the half premiums in arrear, exceed, on the average of seven years, the rate payable for a seven years' term policy . . . . The principle would, of course, be most advantageous to high-rate Society, *but not equally safe or desirable for one proceeding upon a system of low premiums* . . . . By way of caution, we would remark that any Assurance Society, *to be secure*, should, at least, receive from each member *such a premium as, collectively, would pay current claims and expenses*, independently of affording reserves for the future; and strictly speaking the system is only advisable and safe for a *young Society, where it possesses a sufficiently large protective capital, and where the privilege is allowed for a limited term of years, as seven or less.* For a Company with a small paid-up capital to permit a longer extension of the half premium assurances would be analogous to a Society transacting ordinary business, but investing the *greater part of its money in unavailable securities.* As an axiom of finance," he adds, "the Directors of an Assurance Society are *bound to invest only a small portion of their funds, as from time to time received, in securities not readily convertible into cash.* So acknowledged is this that it is customary for actuaries to take care that the amount invested in the public funds shall always keep pace with that lent out on land mortgages or other similar security."

Mr. J. J. Downes pointed out to the Select Committee on Assurance Associations, that "if the Office can afford one assurer to leave one half his premiums in arrear, it ought to have enough in hand to pay the other assurers one half, and they could not do it." In fact, although the system is now adopted by most Offices, and many have applied it extensively as a means of extending their business, we cannot at this moment recall a single writer of any note who has attempted to justify it. Those who have thought most upon the subject have seen cause to condemn. Even the champions for the young Companies, who grow eloquent upon some of the supposed improvements in modern assurance practice, pass quietly over the "Half Credit" plan. Mr. Scratchley boldly launches his shafts at it again and again with success:—

"*Theoretically, and on paper,*" Mr. Scratchley says, "*it might be made to appear that not only half the premiums, but even a larger proportion might be withheld for more than seven years with increased apparent advantage to the Society, from the higher rate of interest, at which the money would seem to be laid out. than that credited to assurers in the tabular calculations; but the law of mortality is in operation all the time and while the nominal assets of the Society would appear to be in the most satisfactory condition, deaths would occur, and the actual available funds would not be sufficient to meet the claims to which they would give rise.* Such a business can, in fact, be only undertaken by *young*

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[*] Life Assurance—Its schemes, &c.

> *Societies when they have a considerable paid up capital* . . . . One more remark in addition: The half premium plan (although a convenience to the assured) does not give a young Society all the advantage which it has a right to expect. It would only do so if 5 per cent. interest were the limit of the advantage that the Directors could obtain from the investment of that portion of the Society's funds which is not intended to be placed in immediately convertible securities. Such is, however, not the case. For every £100 invested on land mortgage or similar security, an additional policy of assurance can be obtained, and a fresh source of profit created. *A young Society is, therefore, best off, when receiving the whole premiums* upon its policies, and so enabled to lend out a portion to induce the affecting of new assurances. Of this benefit, however, it is deprived by consenting to the half premium system. Nevertheless (he adds) to meet the public requirements, we are of opinion that it should be adopted, *with the limitations previously referred to.*"

We have but little to add. If the Offices have not the moral courage to discontinue this pernicious system, we hope agents will have the fairness to dissuade their friends from falling into the snare. We venture to assert, that not more than one policy in three, taken out under this plan, is kept in force after the first few years; and a person who is deceived and disgusted in this manner, is neither likely himself to assure again or to recommend his friends to do so. Of the two, it is far better generally to commence with a higher payment, decreasing as age advances; but nine persons out of every ten prefer the even rates through life, and should be recommended to adopt them, unless special financial or business reasons render some other course really desirable. The evil consists entirely in the part credit plan being held forward as an inducement to persons to assure, instead of simply being employed as a means of temporary aid to those who have already done so.

III. LOANS ON PERSONAL SECURITY.

The system of granting *loans* on personal security, in connection with Life Assurance, has now become so common that many of the new Offices seem almost specially to lay themselves out for it; and such announcements are nearly the first that catch the eye in many of the prospectuses we have perused. We make no apology for quoting the following remarks upon the money-lending system, and what it may lead to. We observe, indeed, recently that one, if not more, of the Assurance Offices has taken up the business of *bill discounting*, and probably will be more safe than dabbling with patched-up personal security, as many Offices do. How far assurers may care to have *their* funds subjected to the hazard of bill discounting is a point for them to determine, and not us. Here is the quotation referred to:—

> "It is more especially necessary to guard the public *against the money-lending Companies*. It is a well-known fact among those conversant with these matters that while many of these Offices would find it impossible to obtain business without some illegitimate efforts, *they have changed their Companies from Insurance Offices into Loan Societies*, lending money on securities which would be refused by all other capitalists, and ekeing them out by policies of insurance in their own Offices. These securities are very often, even with Companies who would be sorely angry were the fact made known to the public, nothing more than personal securities, such as the bond of the assured or borrower, and that of two of his friends, the policy being taken out for a much larger sum than would cover the loan. Of course the interest in such cases is high, and also the prospective interest, and hence some of the astonishing bonuses given by some of the new Offices to their small policy-holders But how dangerous is the principle! What, let me ask, would be the position of such an Office if any great crisis should arrive, such

> a that which followed the financial measures of 1849, when in every quarter confidence was shaken, and credit all but universally destroyed? And are we never to have such a season of distress?"[*]

The changes of the last few months have swept away a great many of these money lending Offices. It is to be hoped those that still exist will speedily set their houses in order, and carry on the business of Life Assurance with due regard to those principles which have already stood the test of experience, and which alone seem destined to lead to ultimate success.

IV. EDUCATIONAL AND MISFORTUNE FUNDS, &c.

Within the last few years other novelties—scarcely to be called "new features"—in Life Assurance, inasmuch as they have nothing whatever to do with it, have been introduced. These consist in *promising* to set apart some portion of profits, such as one-tenth, for the purpose of forming "Educational Funds," and funds out of which to provide for the unfortunate, or it may be improvident shareholders and assurers. To such funds as these, there can be no possible objection. Indeed, we might wish there were more of them; but what connection they have with Life Assurance we cannot divine. It must be remembered, that if one-tenth of the profits are applied to either of these purposes, there will be less by so much for other purposes; and is it not much better to return to assurers the surplus which properly belongs to them, either in the shape of extending the benefits of Life Assurance, by increasing the sums assured, (by reversionary bonus additions) or in cases where it may be preferred, in lessening the annual payment required to keep an insurance policy afloat? Or would it not be even better to give each assurer his proportion of the surplus in *cash*, to be expended in any way he may think proper, rather than to make a "lottery" of a portion of the surplus, by applying it to purposes where there must of necessity be but *few prizes, and many blanks*. We do not intend these remarks to apply to Societies or Offices established for any special class of individuals, such as clergy funds, &c. We speak of the folly of Offices professing to do general Assurance business with all classes of persons holding out such baits to the public.

The following remarks on this subject are in print, and their authorship demands for them careful consideration:—

> "One of the new Offices proposes to set aside a portion of its future profits to provide schools, &c., for the education of the children of its members. This smacks of the philanthropy of the grocer, who, while he professes to sell you his sugar one penny per pound cheaper than his neighbour and rival, remits you the penny in Scotch Snuff!!! It were wiser and equally philanthropic to give to the assurer his share of the profit, to be expended in his own objects, and in accordance with his own judgment But there is another equally laughable, but at the same time more reprehensible promise—reprehensible, because it is one which it is impossible to realize. We allude to the promise held out by one of the modern Offices, to set apart a portion of its future profits, whether such should amount *to thousands or tens of thousands, to hundreds of thousands or to millions, for the support and future provision of any person in decay, who shall have once, for however brief a space of time held a single share in such Company*. To use the very words of the prospectus, to become a shareholder in the ——— is, as it were, to effect

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[*] Life Assurance - its Schemes, &c.

at once and for ever a policy of assurance against want! *Proh pudor!* Did not the crimson blush of shame mantle on the cheek of the writer who penned that paragraph. In our mind's eye we can picture the commotion created by this project on the Stock Exchange—that is if its incredulous members could be brought to believe in the possibility and in the soundness of the scheme. What time bargains!! A to B; B to C; C to D; and so on through the entire range of the alphabet, every transfer carrying with it 'an inalienable unattachable intact right,' to be preserved from want in this newly-found El Dorado. If the prospectus mean anything, it means this, and if it do soberly so mean, we do not hesitate to pronounce it—*simply impossible.*"[*]

We shall not be speaking too strongly if we exclaim with Dr. Price, as to this and all similar schemes, "it is public ignorance to which they appeal." Ignorance of what really can be done leads people to form exaggerated notions, or at all events to put faith in plausible pretences: and *these* it falls to the lot of AGENTS to combat with and remove.

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[*] Life Assurance—its Schemes, &c.

CHAPTER XI.

FURTHER IMPROVEMENTS DESIRABLE.

We intimated that we might probably offer a few suggestions regarding further *improvements* in the general practice of Life Assurance. These will be very short, and may be classed under the following heads:—

1. *More Prompt Settlement of Bona-fide Claims.*
2. *More Liberal Conditions regarding Deaths by Suicide.*
3. *The Substitution of Unchallengeable or Indisputable Policies after an Assurance has been in force sufficient time to establish good faith.*
4. *Substitution of Lives.*

We have in part anticipated these suggestions in our previous remarks, and have also been in part anticipated by several Offices, which have, to some extent, adopted the improvements noted. We therefore here refer to them, with the hope and belief that in time, they will come into general practice by the more substantial Offices, which, by being backward in the adoption of *real* improvements, frequently give less worthy rivals advantages tending to place them on a better footing with the public than their general merits entitle them to.

I. SETTLEMENT OF CLAIMS.

With respect to the more prompt settlement of *bona-fide* claims, we have nothing to add to our remarks at page 236, except that we should wish to see all the Offices fall into the plan.

II. DEATHS BY SUICIDE.

We think there is room for more liberal conditions with respect to deaths by suicide, and even with respect to *duelling*, if not as to deaths by the hands of justice, which are happily rare amongst the classes who most assure in the country. If the Offices feel bound to pay claims under *assigned* policies, where death takes place by either of the above modes,—and if they did not do so the mercantile value of life policies would be considerably lessened,—does it not seem fully within the benevolent scope of Life Offices to grant the same liberality to those by whom such liberality is too frequently far more needed—we mean the wives and children of the unfortunate persons dying by such means. We do not overlook the fact that, unless proper precautions be taken the Offices might be greatly defrauded. Nor do we overlook the circumstance that such deaths as these are included in the general mortality returns of the kingdom, and most probably in the select or special returns upon which some of the Tables in use are based, so that there can be no plea on the ground of prejudicially affecting the mortality expected by the Offices. The precautionary condition might be that a policy should have been in force for one, or two years, before the occurrence of the event producing death, with a further protection that if any *proof of design* upon the Office was adduced payment might be resisted, and the premiums returned in the manner now frequently pursued. Two years seems to be a sufficient period for the policy to be in force in order to bring it under such a provision, and we are glad to see a movement in this direction.

III. INDISPUTABLE POLICIES.

If our previous remarks have had the tendency to make our readers believe that we are at all adverse to giving honest assurers every possible guarantee for the prompt and ready settlement of the claims under their policies, the sooner such a belief is dispelled the better. We protest against a system having a tendency to cause honest assurers to suffer from the acts of dishonest ones; as also against holding out any encouragement for abusing Life Assurance, by dishonest practices; and finally, against Offices taking up and advocating principles which they find and know to be inexpedient, if not impracticable, to carry out. But knowing that the great majority of fraudulently obtained policies are intended to, and do become *early claims*, whereas, with ordinary policies but a small proportion become claims in early years; and also knowing that Assurance Agents and Offices have many more opportunities of hearing the true state of the health of an assurer after he is assured, than at the time of assuring, when perhaps he is an entire stranger to the agent and the medical examiner, we do think a period arrives when something like good faith may be assumed, and when policy-holders may have, and ought to have, every security the Office can afford. Those who have seen much of the practice of Assurance, will see the force of our remarks, and several Offices of high standing have anticipated them, by issuing *unchallengeable* or indisputable policies after periods of five or a greater or less number of years. *Five years* occurs to us as a reasonable time for confirming a contract, found up to that period to be honorable, although the details may be well left to the Office and the assurers to adjust. It is the principle we advocate, and we hlod it to be far before any other species of indisputability which has yet been offered, both for the interest of the Offices and assurers. It would not follow, that because policies had no indemnity of this kind for a period of five years, that all claims which happened in that interval would be disputed. The same practice that now obtains in such, cases, would still continue; but Offices, by the means we advocate, would, as soon as they could do so with safety to their funds, and the general body of assurers, give every possible guarantee that can be required, in addition to that which now exists, for the due performance of all their engagements. The subject deserves consideration by the Offices which have not yet made a move in this direction.

IV. SUBSTITUTION OF LIVES.

We include this as amongst the improvements yet to be made—that is to say, to be made general; for at present but one or two Offices only name it in their prospectuses. If accompanied by strict medical examination, the interests of the Offices would not be prejudicially affected, over an average of cases, by allowing substitution of lives. We leave it, however, to Mr. Scratchley, who has urged the plan with considerable force elsewhere, to make good the case here. He gives the following examples of its value, without, as he asserts, inflicting loss upon the Offices.

> "Suppose a gentleman in the army, having effected an assurance upon his life in time of peace, to be required afterwards to enter upon remote or active service If he wish to avoid an increase of premium, and be in the full confidence of his health he may prefer at once to give his policy to a younger brother or friend at the death of whom the amount assured would be paid; and yet he may retain to himself, by mutual agreement, some interest in the policy so transferred. Again, suppose a creditor to have effected an assurance upon the life of a debtor, as collateral security for a loan, which is afterwards paid off, so that the creditor has no longer any interest in keeping up the policy; or suppose a person to have borrowed money on mortgage from a private individual or a Society, and to have assured his life, so as to secure his family from liability for the debt, in case of his decease before he has paid it off; in both these cases the *transfer* principle would be at once susceptible of advantageous application, as the power of transferring the assurances from their own to other lives would allow of the policies becoming serviceable to other parties for similar commercial purposes; and the premiums paid by the original assurers would, thus, not be entirely lost, when their desire to keep the policies up for their own respective benefit had ceased, as the assurers or the substituted lives would find it advantageous to pay an equitable sum for the transfer."

Looking, however, only at one simple fact, namely, that *selection* is held to be beneficial to the Office, it appears to us that the substitution of lives, accompanied as it is with the right of selection in such case, gives the Office a decided advantage in this particular; and hence we announce the point as at least deserving of the careful consideration of those who have the management of Assurance Offices.

By way of sequel to this and the two preceding chapters, we may notice a point which has been a good deal discussed at various times, namely, the propriety or otherwise of uniting the business of Life and Fire Assurance in the same Office. Of the propriety, or rather the want of it, of making the funds of the one branch liable for the losses of the other, there cannot be two opinions: indeed, no Company can obtain a special Act of Parliament where such a custom prevails. In most cases now-days where the businesses are carried on together, they are under distinct deeds of settlement, with separate shareholders and accounts; although, with some of the earlier Companies, it is not so. The advantage of having the Fire and Life branches under distinct deeds is obvious; for instance, the one may be discontinued and disposed of without, in any way, affecting the constitution of the other. The advantage of having them carried on under the same management and on the same premises is also obvious: in so far as the expenses of each may be considerably reduced, and the connection of the one made greatly serviceable in extending the connection of the other.

About the commencement of the present century some excitement was got up, in consequence of several of the Fire Offices taking up the business of Life Assurance. Now-a-days the fears would, with more reason, be in the opposite direction.

CHAPTER XII.

RATES OF PREMIUM; METHOD OF DETERMINING THEM; AND TABLES OF RATES OF ALL THE EXISTING OFFICES.

> "Even those events which are considered and called purely accidental and fortuitous are discovered to have certain relations and to be governed by certain laws. Thus the number of births, marriages, and deaths; the relative proportions of the sexes; the number of ships cast away; of houses destroyed by fire; and a number of other apparent casualties are under similar circumstances found to be nearly equal during equal periods of time; whence it is easy from observations made upon them to determine the amount which an individual should pay for the protection of his property from fire or shipwreck, or for the securing of a certain sum to be paid to his surviving relatives at his death."—*Pocock.*

The labours of the actuary, as applied to the construction of correct Mortality Tables, and the investigations of the financialist, with respect to the probable rate of interest to be realised on invested capital over a series of years, all concentrate themselves in the solution of one problem, viz. the rate of PREMIUM[*] which *must be* charged in order to carry out an insurance contract; or as Dr. Farr has well expressed it—"What annual premium will amount, on an average, at a given rate of interest, and by a given Life Table, to £1 or £1,000 at the death of a person of the class A. aged 35, or any other age, is a highly important question: *it stands at the threshold of life assurance.*" It is clear then that if we desire to view the whole structure we must remove all obstructions from this point, and such is the purpose of the present chapter.

Sufficient has been said in the previous chapters of this division to prepare the reader for understanding the general principles and considerations which belong to the construction of rates of premium: for instance, the Mortality Tables give the average duration and "expectation" of life; and the average rate of interest in past times furnishes at least *some* guide to what may be realised in future: and these are the main elements to be taken into account. Still we shall proceed to give here a few simple, and we hope useful, preparatory illustrations.

It is obvious that if a person aged 20 wished to assure for £100, (without any addition from profits), and a Mortality Table, which could be relied upon, gave him an expectation of 50 more years—that is to say, that the Mortality Table shewed that, on an average, persons aged 20 lived for 50 years longer, and therefore did not die till 70; it is obvious that an Assurance Office demanding an annual premium of £2 would be perfectly safe: but from what has already been said on the subject of *interest* it is equally obvious that the transaction would be unjust against the person assuring, because he would receive no benefit from the interest realised on his premiums during the 50 years he would be in course of paying them. On this point let us refer the reader back to pages 182 and 183; merely adding here that (by reason of the element of interest) the first £2 paid would be worth to the Office from four to five times as much as the last two pounds, and so proportionally for every £2 paid in the interval. The reader will understand that the "expectation" at the age 20 is *not* 50 years; and that this particular term is only introduced for purposes of illustration.

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[*] "The general signification of the Latin word *Premium* is a reward or recompense, but it is also used both by Pliny and Cicero to express an advantage, benefit, or profit, which is the sense it bears as the payment made in consideration of an assurance."—*Pocock.*

Those who have made themselves familiar with the construction of Mortality Tables do not require to be told that if the rates of premium were charged in strict conformity with the risks or chances of life *at its various ages* (as shewn by such Tables) they would fluctuate at every year of age: as for instance, the premium which represents the risk of assuring £100 for *one year* on the life of a child immediately after birth is (according to English Life Table No. 2) £15 9*s*. 7*d*., without "loading" or "addition for expenses and contingencies;"* while for a like assurance at the age of 13, under like circumstances, it is only 9*s*. 2*d*. *(nine shillings and twopence)*; at age 82, however, it again stands at £15 10*s*. 9*d*.; and at 90 it is £25 16*s*. 2*d*.! This may be called the *natural* premium: the premium, however, which is in general use amongst the Offices is known technically as the "uniform" or "invariable" premium—names derived from the circumstance that the same rate of premium which is paid on taking out a policy continues during the remainder of life, or in office phraseology during "the currency of the policy." We are now speaking of non-participating policies which are exempt from bonus influences, and are therefore best adapted for illustration. If a man aged 30 pays £2 per annum (under the uniform rates) to assure £100 at death (without profits) £2 will be the annual premium for the remainder of his life.

The "natural" premium, then, is that which is deduced directly from the Mortality Table, without being subjected to the processes of *uniformity* or *invariability*. Thus the Table shews that out of 307 males aged 30, *three* will die in the course of the year; therefore, if each of the 307 persons paid down, at the commencement of a year, 18s. 11d., (making £290 8s. 3d., which improved at 3 per cent. interest during the year would amount to £300) as the premium for assuring £100 to those who died, the claims would just equal the funds in hand, and there would be an end of the transaction. Or out of 189 males aged 60, *six* will die during the year, so that the payment of £3 2s. 4d. by each at the commencement of a year would provide for all the claims that would arise, viz. £600.

If Insurance Societies could be conducted on this plan every one might readily understand them: but the objections considerably outweigh all the advantages. In the first place the premium would *increase* with the age from 15 upwards (from birth to the age of 13 it decreases year by year) so that a person who commenced assuring for £100 at 20, would pay for the first year 15s. 9d., the second year 16s. By the age of £25 he would pay 17s. 2d.; at 30, 18s. 11d.; at 40, £1 3s. 9d.; at 50, £1 14s. 10d.; at 60, £3 2s. 4d.; at 70, £6 9s.; at 80, £13 10s. 3d.; and at 90, if he lived so long, £25 16s. 2d., each intermediate year an increase going on, as will be seen by the Table presently.

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* *These terms will be explained as we proceed.*

Now it might be found very convenient in the younger ages to be assured so cheaply, but exceedingly inconvenient in the older ages to pay so much: for most men, as a matter of policy, would rather pay more at the younger ages so as to lighten their liabilities in after life. But another difficulty exists; the Office must make sure that it has a class of lives at least up to the average as regards health; otherwise its mortality would be greater than that indicated in the Table and provided for by the premiums: hence a medical examination would be required of each member every year before the Insurance was renewed, and this would be not only objectionable on the ground of *expense*, but also from the circumstance that if a person had paid for a number of years, and then fell into bad health, he would be deprived of the benefit of the assurance just at the period it became most desirable to him. This is a fatal objection: and variable rates are only used in occasional business arrangements.

If the plan just detailed was found practicable for general purposes it would greatly simplify the *finance* of Life Assurance; for instance, there would no necessity for periodical valuations of assets and liabilities; each year would prove itself, and be distinct in its pecuniary relations from all previous and subsequent ones. The policies would have no "surrender" values, as the premium would be just equal to the risk. The funds also being invested for short periods and at a low rate of interest, might be rendered secure from loss, or from any great depreciation, although in well-managed Life Offices the losses are exceedingly few, while the expenses of management (except in the item of medical examinations) would be merely nominal. But as it is found *not* to be practicable we may pass on to another stage.

Next in simplicity to the natural or variable premiums would be the plan of paying the premium for the whole of life in one sum, as set forth in the *sixth* column of the following Table. The amount of the "single premium" varies at each age according to the decrements of life shown by the Mortality Table, although the variation is not so marked as in the case of assurances for one year only, because in the one case the average is spread over the whole of life; in the other it is confined to the chances of a single year, The principle upon which the "single premiums" are calculated is that the sum charged improved at the rate of interest assumed in the Mortality Table *during the period of the expectation of life*, will amount to £100.[*] Column

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[*] All premiums are actually deduced from the decrements shown by the Life Table: that is to say, from the deaths that will take place each year out of any given number *of persons* (*vide* column 3 of the following Table), and not from the "expectation" of *life shown by* the Table: the former plan being more mathematically exact. The

four therefore furnishes the key. At the age of 20 the expectation of life is 40 years—£35 4*s*. 10*d*. invested at 3 per cent. for forty years will amount to £100. At 60 the expectation is 14 years: £67 15*s*. 11*d*. invested at 3 per cent. for that term will also produce £100. At age 90 the example is exceedingly simple, the expectation is 3 years: £90 16*s*. 7*d*. at 3 per cent. again gives £100. Some additions have to be made for expenses; but it is clearly immaterial to the Office at what age the assurance contract is commenced. In most cases, however, it would be even more inconvenient to pay single premiums than the premiums for a single year.

The *uniform* or *invariable* premium is constructed on the principle of equalisation. A man aged 20 agrees to pay £1 11*s*. 8*d*. *per annum* for an assurance of £100, instead of 15*s*. 9*d*., the natural premium for that age (increasing with each additional year of age) in order that when he arrives at 60 he may still have only £1 11*s*. 8*d*. to pay *instead* of £3 2*s*. 4*d*., which is the "natural" premium for age 60; or instead of £6 9*s*., which is the "natural" premium at age 70, should he live so long. That which he pays over and above the natural premium in his early years is invested at interest to compensate for that which he pays below the natural premium in the after ages: the reverse occurring at the age of 48. If a person assuring at age 20 die before the age of 48, the Office gains an advantage by the uniform rates; if he die after that age the natural rates would pay the Office best. Looking at it in another light, the "expectation" at age 20 is 40 years—forty times £1 11s. 8d. is £63 6s. 8d; the "natural" premiums on a £100 policy during the like period would amount to £55 5s. or £8 1s. 8d. less; but for this £8 1s. 8d. (and interest thereon made during the term) the policy-holder is exempt from the difference between the "uniform" and the "natural" premium at all ages above 60, where the difference is very great; and also exempt from rejection on the ground of unsound health, &c. &c. So that there can be no doubt that the uniform rates are more advantageous to policy-holders as well as far more convenient. Most Offices indeed have Tables of "increasing" rates: that is rates which increase from time to time after the assurance is effected, according to a graduated scale—the increase generally taking place each five or seven years up to a given age, when the premiums become stationary. There are also Tables the exact reverse of these, or "decreasing" rates, graduated in periods of five years. Such Tables, however, are arranged for special cases, and have already been explained.

The difference between the single premium, and the aggregate of the annual premiums, *expected* to be paid at any age is entirely occasioned by the operation of interest. At age 20 the single payment is £48 10s. 9d.; the annual payment of £1 11s. 8d. for 40 years (column 4) we have just seen is £63 6s. 8d.—difference £14 15s. 11d. As we have said, it is immaterial to an Office at what age an assurance is

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"expectation" also is deduced in like manner from the decrements, as we have shewn in a chapter on Mortality Tables. In some of the following examples, however, we shall find the expectation better adapted for illustration than the decrements.

commenced, providing it be within limits likely to afford a fair average of lives, *because each person is called upon to pay an increased premium corresponding with his age, or his chances of dying sooner.* So that if a person at an advanced age make a larger annual payment than a young man, he may be expected to make fewer of them.

We would not be understood to assert that it is equally immaterial to the assured at what period of life they commence the assurance contract. We most decidedly recommend all persons to assure young. If they cannot assure for such a sum as they may desire, let them assure for such a sum as they can afford. Leaving out the advantage of assuring while they are in robust health, which is an important one, the outlay is much less at the commencement of the contract, and continues so during the whole of life, as already explained But the chief inducement lies in the increased Bonus advantages. If a man assures for a small sum, and allows his Bonuses to accumulate, the sum steadily increases, and in a series of years will probably become doubled. If he applies his bonuses to reduction of premiums, in his later years he will be exempt from payment altogether. In every respect the inducement appears great. How many times does an agent in his experience receive the reply, "Ah! I wish I had assured when I was young." On how many death-beds has this wish been breathed with mournful intensity! Let us then not be misunderstood on this point.

We have, in our previous examples in this chapter, confined ourselves to non-participating assurances; or those which give the policy-holders no share in the profits of the Office; and the rates we have quoted have been what are called "net" or "pure" rates: that is to say, rates which have had no additions made to them for the purposes of meeting expenses of management, or losses or contingencies of any kind, other than the contingency of death. We need not say that such rates are not, and could not, be used in practice: they have to undergo the process of "charging" or "loading," by which they become increased some 20 per cent. or more, as we shall presently see. The *pure* or natural rates are, as already stated, those derived directly from the Mortality Table: the process being a mathematical one which it is out of our province here to explain. But it will greatly facilitate the understanding of the subject, if we now present the entire Table from which the several foregoing examples have been drawn, under such an arrangement as to shew the *connection of the rates with the risks of life;* and the first five columns exhibits this point very clearly. As we have not done so before, we may take this opportunity of impressing upon the reader the necessity of reading very carefully the explanation over each column of this and all previous and subsequent Tables. A neglect of this rule often causes Tables to be looked upon as useless, or tedious, when they are replete with instruction and utility.

Summary of results deduced from the English Life Table, No. 2, for Males only. Interest 3 per Cent. per Annum.

Age or Birthday.	To 1000 children born the number of Males living.	Males dying in the year following	Expectation of Life in years.	To Assure £100 on the Life of a Male.									Present value of a Life Annuity of £1.			Life Annuity which £100 will purchase.		
				Premium for a single year.			Premium for the whole of Life in one sum.			Uniform *Annual* Premium.								
				£	s	d.	£	s.	d	£	s.	d.	£	s.	d.	£	s.	d.
0	513	82	40	15	9	7	43	17	9	2	5	7	19	5	4	5	3	10
1	431	28	47	6	6	10	34	16	2	1	11	1	22	7	8	4	9	4
2	403	15	49	3	10	1	31	7	4	1	6	7	23	11	3	4	4	11
3	388	10	50	2	7	11	29	15	6	1	4	8	24	2	3	4	2	11
4	379	7	50	1	15	7	28	18	3	1	3	8	24	8	2	4	1	11
5	372	5	50	1	6	2	28	9	5	1	3	2	24	11	2	4	1	5
6	367	4	50	0	19	5	28	7	2	1	3	1	24	11	11	4	1	4
7	363	3	49	0	16	9	28	9	11	1	3	3	24	11	0	4	1	6
8	360	3	49	0	14	1	28	14	8	1	3	6	24	9	4	4	1	9
9	357	2	48	0	12	6	29	1	8	1	3	11	24	7	0	4	2	2
10	355	2	47	0	10	6	29	10	1	1	4	5	24	4	1	4	2	8
11	353	2	47	0	9	4	30	0	2	1	5	0	24	0	7	4	3	3
12	351	2	46	0	9	3	30	11	6	1	5	8	23	16	9	4	3	11
13	350	2	45	0	9	2	31	3	4	1	6	4	23	12	8	4	4	8
14	348	2	44	0	10	8	31	15	7	1	7	2	23	8	5	4	5	5
15	346	2	44	0	9	8	32	7	3	1	7	10	23	4	5	4	6	1
16	344	2	43	0	11	0	33	0	0	1	8	8	23	0	1	4	6	11
17	342	2	42	0	12	10	33	12	3	1	9	6	22	15	10	4	7	9
18	340	3	41	0	14	9	34	3	9	1	10	3	22	11	11	4	8	6
19	338	3	41	0	15	5	34	14	4	1	11	0	22	8	3	4	9	3
20	335	3	40	0	15	9	35	4	10	1	11	8	22	4	8	4	9	11
21	332	3	39	0	16	0	35	15	7	1	12	5	22	1	0	4	10	8
22	329	3	39	0	16	3	36	6	7	1	13	3	21	17	3	4	11	6
23	327	3	38	0	16	7	36	17	9	1	14	1	21	13	4	4	12	4
24	324	3	37	0	16	10	37	9	3	1	14	11	21	9	5	4	13	2
25	321	3	37	0	17	2	38	1	0	1	15	9	21	5	5	4	14	0
26	318	3	36	0	17	6	38	12	11	1	16	8	21	1	4	4	15	11
27	315	3	35	0	17	10	39	5	2	1	17	8	20	17	1	4	14	11
28	313	3	35	0	18	2	39	17	9	1	18	8	20	12	9	4	16	11
29	310	3	34	0	18	6	40	10	6	1	19	8	20	8	5	4	17	11
30	307	3	33	0	18	11	41	3	8	2	0	9	20	3	11	4	19	0
31	304	3	33	0	19	4	41	17	0	2	1	11	19	19	3	5	0	2
32	301	3	32	0	19	9	42	10	8	2	3	1	19	14	7	5	1	4
33	298	3	31	1	0	3	43	4	8	2	4	4	19	9	10	5	2	7
34	294	3	31	1	0	9	43	18	11	2	5	8	19	4	11	5	3	11
35	291	3	30	1	1	3	44	13	6	2	7	0	18	19	11	5	5	3
36	288	3	29	1	1	10	45	8	4	2	8	6	18	14	10	5	6	9
37	285	3	28	1	2	5	46	3	6	2	10	0	18	9	7	5	8	3
38	282	3	28	1	3	1	46	19	0	2	11	7	18	4	4	5	9	10
39	278	3	27	1	3	9	47	14	8	2	13	2	17	18	11	5	11	5
40	275	3	26	1	4	6	48	10	9	2	14	11	17	13	5	5	13	2
41	271	4	26	1	5	3	49	7	1	2	16	9	17	7	9	5	15	0
42	268	4	25	1	6	1	50	3	9	2	18	8	17	2	1	5	16	11
43	264	4	24	1	7	0	51	0	8	3	0	9	16	16	3	5	19	0
44	261	4	24	1	7	11	51	17	11	3	2	10	16	10	4	6	1	1
45	257	4	23	1	8	11	52	15	6	3	5	1	16	4	4	6	3	4
46	253	4	22	1	10	0	53	13	4	3	7	6	15	18	2	6	5	9
47	249	4	22	1	11	1	54	11	6	3	10	0	15	11	11	6	8	3
48	245	4	21	1	12	3	55	10	0	3	12	8	15	5	7	6	10	11
49	241	4	21	1	13	6	56	8	9	3	15	6	14	19	1	6	13	9

1 2 3 4 5 6 7 8 9

Summary of results (*continued*).

Age or Birthday.	To 1000 children born, the number of Males living.	Males dying in the year following.	Expectation of Life in years.	To Assure £100 on the Life of a Male.									Present Value of a Life Annuity of £1.			Life Annuity which £100 will purchase.		
				Premium for a single year.			Premium for the whole of Life in one sum.			Uniform *Annual* Premium.								
				£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
50	237	4	20	1	14	10	57	7	11	3	18	6	14	12	7	6	16	9
51	233	4	19	1	16	3	58	7	5	4	1	8	14	5	10	6	19	11
52	228	4	19	1	17	8	59	7	3	4	5	1	13	19	0	7	3	4
53	224	5	18	1	19	3	60	7	6	4	8	9	13	12	1	7	7	0
54	219	5	17	2	0	10	61	8	2	4	12	8	13	5	0	7	10	11
55	215	5	17	2	2	6	62	9	2	4	16	11	12	17	9	7	15	2
56	210	5	16	2	4	10	63	10	9	5	1	6	12	10	5	7	19	9
57	205	5	15	2	9	2	64	12	6	5	6	5	12	2	11	8	4	8
58	200	6	15	2	13	5	65	13	11	5	11	7	11	15	7	8	9	10
59	194	6	14	2	17	10	66	15	0	5	16	11	11	8	4	8	15	2
60	189	6	14	3	2	4	67	15	11	6	2	7	11	1	2	9	0	11
61	183	6	13	3	7	1	68	16	6	6	8	7	10	14	1	9	6	10
62	176	7	12	3	12	2	69	17	0	6	14	11	10	7	0	9	13	2
63	170	7	12	3	17	6	70	17	3	7	1	8	10	0	1	9	19	11
64	163	7	11	4	3	3	71	17	4	7	8	10	9	13	2	10	7	1
65	156	7	11	4	9	5	72	17	2	7	16	4	9	6	4	10	14	8
66	149	7	10	4	16	1	73	16	10	8	4	5	8	19	8	11	2	8
67	141	8	10	5	3	4	74	16	2	8	13	0	8	13	0	11	11	3
68	134	8	9	5	11	3	75	15	3	9	2	1	8	6	5	12	0	4
69	126	8	9	5	19	9	76	14	0	9	11	9	8	0	0	12	10	0
70	118	8	9	6	9	0	77	12	5	10	2	0	7	13	8	13	0	3
71	111	8	8	6	19	0	78	10	5	10	13	0	7	7	6	13	11	3
72	103	8	8	7	9	10	79	8	1	11	4	7	7	1	5	14	2	10
73	95	8	7	8	1	6	80	5	3	11	16	10	6	15	6	14	15	1
74	87	8	7	8	14	1	81	1	11	12	9	11	6	9	10	15	8	2
75	79	8	7	9	7	7	81	18	2	13	3	9	6	4	3	16	2	0
76	71	7	6	10	2	1	82	13	10	13	18	4	5	18	10	16	16	7
77	64	7	6	10	17	7	83	9	0	14	13	9	5	13	8	17	12	0
78	57	7	6	11	14	1	84	3	8	15	10	0	5	8	7	18	8	3
79	50	6	5	12	11	7	84	17	8	16	7	2	5	3	9	19	5	5
80	44	6	5	13	10	3	85	11	3	17	5	2	4	19	2	20	3	5
81	37	6	5	14	9	11	86	4	2	18	4	2	4	14	8	21	2	5
82	32	5	4	15	10	9	86	16	7	19	4	0	4	10	5	22	2	3
83	27	5	4	16	12	7	87	8	5	20	4	10	4	6	5	23	3	1
84	22	4	4	17	15	8	87	19	8	21	6	7	4	2	6	24	4	10
85	18	4	4	18	19	9	88	10	5	22	9	3	3	18	10	25	7	6
86	15	3	4	20	4	11	89	0	8	23	12	11	3	15	4	26	11	2
87	12	3	3	21	11	2	89	10	5	24	17	6	3	12	0	27	15	9
88	9	2	3	22	18	6	89	19	7	26	3	0	3	8	10	29	1	4
89	7	2	3	24	6	10	90	8	4	27	9	6	3	5	10	30	7	9
90	5	1	3	25	16	2	90	16	7	28	16	10	3	3	0	31	15	1
91	4	1	3															
92	3	1	3															
93	2	1	2															
94	1	0	2															
95	1	0	2															
96	1	0	2															
97	0	0	2															
1	2	3	4	5			6			7			8			9		

[As Assured and Annuity transactions are very rarely negociated at such advanced ages even as 90—60 being a very customary limit—it was considered useless to extend the last four columns any further.]

Dr. Farr, to whose able and laborious investigations we owe this Table, gives the following explanation concerning it:—

> "By this Table it is seen that if 382 men (column 2), at the age of 21 (column 1), paid £1 12s 5d. (column 6) each at that birthday, and the same sum at every future birthday so long as they lived—the money realizing 3 per cent. per annum interest—it would amount to £100 at the death of each, or, as is understood in these cases, at the end of the year in which the death occurred. If the cost of management *were nothing*, in a Mutual Life Office £1 12s. 5d. would be the annual premium to be paid for a policy of £100. The payment of 16s. (column 5) would, on the same terms, be the premium for insuring the life of a male for *one year only* for £100. If anyone who wished to insure the life of a boy engaged to pay to an Office the premiums in column 5, commencing with £15 9s. 7d. at birth, £6 6s. 10d. on the first birthday, 9s. 8d. on the 15th, and £6 9s. on the 70th birthday; or, in fact, the premiums in column 5, opposite to each birthday, so long as the life should last, the risk would be covered from year to year, and the transaction might terminate at the end of any year *without loss to either party*. These are the *net* premiums; and for females the premiums would be a little less, although but few offices make any distinction between their male and female rates. If the Office put on—as is usual with all Companies—20 or 30 per cent. for expenses and profit, the usual profits would be realized; but the addition on this plan (of varying premiums) should be rather greater than in case of uniform premiums, as subscribed capital would be required to cover fluctuations in the mortality."

The two last columns in the Table apply to *annnities*, which are also seen to be regulated entirely by the risks and chances of life at the various ages. Here are Dr. Farr's observations on the Table:—

> "The present value of a Life Annuity of £1 at the age of 21 is £22 1s. (column 8) on the life of a male. On the life of a female it would be rather more, as female life is longer than male life. The present value of an annuity of £1,000 a-year on the life of a man would be 1,000 times £22 1s., or £22,050; and in the same way the value of an annuity of £10, £20, £35, or any other number of pounds may be found. £100 will purchase an annuity of £4 10s. 8d. (column 9) on the life of a man aged 21, and about a shilling less on the life of a female. £1,000 will of course purchase an annuity of 10 times the amount, or £45 6s. 8d. on the life of a man. But the Office granting annuities at these rates would *gain nothing* (except by making more than 3 per cent. interest of the purchase money), the values in the Table being the net values; they might, indeed, lose, if the lives were well selected—that is, if the lives were above the ordinary standard of health. For these reasons a certain arbitrary pr centage must be put on the "present values," and taken off the annuities. And an Office attempting to sell annuities on these terms might be looked upon with suspicion."

It may not be out of place here to remark, that an annuity transaction in the ordinary form is the very reverse of a Life Assurance transaction. In the latter case, as the reader already knows, the Office stipulates, in consideration of a certain annnal premium (or in other words "an annuity") being paid during the life of the person assured to pay down a certain principal sum on the termination of that life. In the case of an annuity the Office guarantees, in consideration of a certain principal sum paid down *at the commencement of the transaction*, to grant a certain annual allowance or annuity, during the life of the person paying such principal sum. In the Life Assurance transaction it is clearly to the interest of the Office that the policy-holder should continue to *live:* the advantage being the receipt of the annual premium, and the *interest* which the Office realises on the principal sum to be paid on the death of the policy-holder. In the case of an annuity, it is clearly to the advantage of the Office that the annuitant should *not live:* for by his early death the Office retains the annual payments it would otherwise have to make, and is benefitted to that extent. It is obvious, therefore, that while an Office must exercise great caution in the selection of lives for assurance purposes, with the view that they should survive the full average of performance of all their engagements. The subject deserves consideration by the Offices which have not yet made a move in this direction.

IV. SUBSTITUTION OF LIVES.

We include this as amongst the improvements yet to be made—that is to say, to be made general; for at present but one or two Offices only name it in their prospectuses. If accompanied by strict medical examination, the interests of the Offices would not be prejudicially affected, over an average of cases, by allowing substitution of lives. We leave it, however, to Mr. Scratchley, who has urged the plan with considerable force elsewhere, to make good the case here. He gives the following examples of its value, without, as he asserts, inflicting loss upon the Offices.

> "Suppose a gentleman in the army, having effected an assurance upon his life in time of peace, to be required afterwards to enter upon remote or active service If he wish to avoid an increase of premium, and be in the full confidence of his health he may prefer at once to give his policy to a younger brother or friend at the death of whom the amount assured would be paid; and yet he may retain to himself, by mutual agreement, some interest in the policy so transferred. Again, suppose a creditor to have effected an assurance upon the life of a debtor, as collateral security for a loan, which is afterwards paid off, so that the creditor has no longer any interest in keeping up the policy; or suppose a person to have borrowed money on mortgage from a private individual or a Society, and to have assured his life, so as to secure his family from liability for the debt, in case of his decease before he has paid it off; in both these cases the *transfer* principle would be at once susceptible of advantageous application, as the power of transferring the assurances from their own to other lives would allow of the policies becoming serviceable to other parties for similar commercial purposes; and the premiums paid by the original assurers would, thus, not be entirely lost, when their desire to keep the policies up for their own respective benefit had ceased, as the assurers or the substituted lives would find it advantageous to pay an equitable sum for the transfer."

Looking, however, only at one simple fact, namely, that *selection* is held to be beneficial to the Office, it appears to us that the substitution of lives, accompanied as it is with the right of selection in such case, gives the Office a decided advantage in this particular; and hence we announce the point as at least deserving of the careful consideration of those who have the management of Assurance Offices.

By way of sequel to this and the two preceding chapters, we may notice a point which has been a good deal discussed at various times, namely, the propriety or otherwise of uniting the business of Life and Fire Assurance in the same Office. Of the propriety, or rather the want of it, of making the funds of the one branch liable for the losses of the other, there cannot be two opinions: indeed, no Company can obtain a special Act of Parliament where such a custom prevails. In most cases now-days where the businesses are carried on together, they are under distinct deeds of settlement, with separate shareholders and accounts; although, with some of the earlier Companies, it is not so. The advantage of having the Fire and Life branches under distinct deeds is obvious; for instance, the one may be discontinued and disposed of without, in any way, affecting the constitution of the other. The advantage of having them carried on under the same management and on the same premises is also obvious: in so far as the expenses of each may be considerably reduced, and the connection of the one made greatly serviceable in extending the connection of the other.

About the commencement of the present century some excitement was got up, in consequence of several of the Fire Offices taking up the business of Life Assurance. Now-a-days the fears would, with more reason, be in the opposite direction.

TABLE

Shewing the process of "loading" rates of premium: also affording a compariso between the English and Carlisle Rates loaded, and the Northampton *net* Rates.

Age.	English Table, 3 per cent.						English rates charged.			Carlisle 4 ℘ cent. rates charged 40 per cent.			Northampton 3 per cent, *not* charged.		
	Net premium.			Charge 20 ℘ cent.											
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
15	1	7	10	0	5	7	1	13	5	1	12	8	1	18	7
16	1	8	8	0	5	9	1	14	5	1	13	6	1	19	7
17	1	9	6	0	5	11	1	15	5	1	14	3	2	0	8
18	1	10	3	0	6	1	1	16	4	1	15	1	2	1	8
19	1	11	0	0	6	2	1	17	2	1	16	0	2	2	8
20	1	11	8	0	6	4	1	18	0	1	16	11	2	3	7
21	1	12	5	0	6	6	1	18	11	1	17	11	2	4	6
22	1	13	3	0	6	8	1	19	11	1	18	11	2	5	4
23	1	14	1	0	6	10	2	0	11	2	0	1	2	6	2
24	1	14	11	0	7	0	2	1	11	2	1	3	2	7	1
25	1	15	9	0	7	2	2	2	11	2	2	6	2	8	1
26	1	16	8	0	7	4	2	4	0	2	3	9	2	9	1
27	1	17	8	0	7	7	2	5	3	2	5	2	2	10	1
28	1	18	8	0	7	9	2	6	5	2	6	7	2	11	1
29	1	19	8	0	7	11	2	7	7	2	7	11	2	12	2
30	2	0	9	0	8	2	2	8	11	2	9	2	2	13	4
31	2	1	11	0	8	5	2	10	4	2	10	6	2	14	7
32	2	3	1	0	8	8	2	11	9	2	11	10	2	15	9
33	2	4	4	0	8	11	2	13	3	2	13	4	2	17	1
34	2	5	8	0	9	2	2	14	10	2	14	11	2	18	5
35	2	7	0	0	9	5	2	16	5	2	16	8	2	19	10
36	2	8	6	0	9	8	2	18	2	2	18	5	3	1	4
37	2	10	0	0	10	0	3	0	0	3	0	4	3	2	10
38	2	11	7	0	10	4	3	1	11	3	2	4	3	4	6
39	2	13	2	0	10	8	3	3	10	3	4	5	3	6	2
40	2	14	11	0	11	0	3	5	11	3	6	6	3	8	0
41	2	16	9	0	11	4	3	8	1	3	8	7	3	9	10
42	2	18	8	0	11	9	3	10	5	3	10	9	3	11	8
43	3	0	9	0	12	2	3	12	11	3	12	11	3	13	8
44	3	2	10	0	12	7	3	15	5	3	15	3	3	15	9
45	3	5	1	0	13	0	3	18	1	3	17	8	3	17	11
46	3	7	6	0	13	6	4	1	0	4	0	5	4	0	2
47	3	10	0	0	14	0	4	4	0	4	3	3	4	2	7
48	3	12	8	0	14	6	4	7	2	4	6	6	4	5	1
49	3	15	6	0	15	1	4	10	7	4	10	2	4	7	10
50	3	18	6	0	15	8	4	14	2	4	14	2	4	10	7
51	4	1	8	0	16	4	4	18	0	4	18	9	4	13	6
52	4	5	1	0	17	0	5	2	1	5	3	6	4	16	5
53	4	8	9	0	17	9	5	6	6	5	8	7	4	19	7
54	4	12	8	0	18	7	5	11	3	5	14	1	5	2	10
55	4	16	11	0	19	5	5	16	4	5	19	11	5	6	4
56	5	1	6	1	0	4	6	1	10	6	6	4	5	10	1
57	5	6	5	1	1	3	6	7	8	6	13	2	5	14	0
58	5	11	7	1	2	4	6	13	11	7	0	5	5	18	2
59	5	16	7	1	3	5	7	0	4	7	7	9	6	2	7
60	6	2	7	1	4	6	7	7	1	7	14	11	6	7	4
61	6	8	7	1	5	9	7	14	4	8	1	7	6	12	4
62	6	14	11	1	7	0	8	1	11	8	8	6	6	17	9
63	7	1	8	1	8	4	8	10	0	8	15	11	7	3	7
64	7	8	10	1	9	9	8	18	7	9	4	2	7	9	10

Process of "Loading" (*continued.*)

Age.	English Table, 3 per cent.		English rates charged.	Carlisle 4 ℔ cent. rates charged 40 per cent.	Northampton 3 per cent, *not* charged.
	Net premium.	Charge 20 ℔ cent			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
65	7 16 4	1 11 3	9 7 7	9 13 2	7 16 8
66	8 4 5	1 12 11	9 17 4	10 3 1	8 4 1
67	8 13 0	1 14 7	10 7 7	10 14 2	8 12 1
68	9 2 1	1 16 5	10 18 6	11 6 5	9 0 9
69	9 11 9	1 18 4	11 10 1	12 0 2	9 10 2
70	10 2 0	2 0 5	12 2 5	12 15 6	10 0 4
71	10 13 0	2 2 7	12 15 7	13 12 10	10 11 4
72	11 4 7	2 4 11	13 9 6	14 10 11	11 3 4
73	11 16 10	2 7 5	14 4 3	15 8 8	11 16 2
74	12 9 11	2 10 0	14 19 11	16 5 11	12 9 10
75	13 3 9	2 12 9	15 16 6	17 1 1	13 4 4
76	13 18 4	2 15 8	16 14 0	17 17 1	13 19 3
77	14 13 9	2 18 9	17 12 6	18 13 0	14 15 8
78	15 10 0	3 2 0	18 12 0	19 10 4	15 14 0
79	16 7 2	3 5 5	19 12 7	20 11 6	16 15 8
80	17 5 2	3 9 1	20 14 3	21 12 6	18 0 0
81	18 4 2	3 12 10	21 17 0	22 17 8	19 6 3
82	19 4 0	3 16 10	23 0 10	24 2 3	20 14 8
83	20 4 10	4 1 0	24 5 10	25 9 10	22 4 0
84	21 6 7	4 5 4	25 11 11	26 19 1	23 8 11

This Table will be found exceedingly useful in testing the equity, or otherwise, of the rates of premium adopted by the various Offices, assuming, as we have already done, that the English Life Table fairly represents the present mortality of the kingdom, and of this we can see no room to doubt. It will be observed, that at all ages up to 44 the Northampton rates are the highest. That at that age the rates under each of the Tables almost exactly correspond; and that in the after ages, the Northampton rates are lower than those of either of the other Tables. This was to be expected for the reasons pointed out in our chapter on Mortality Tables.

Dr. Farr has pointed out that in the preceding Table the Northampton rate, at age 20, is 38 per cent. in excess of the "net" premium in the English Life Table; while at 50, it is only 15 per cent. in excess, and at 66 it gives the net premium without *any "charge" at all.* The average at all ages is 27 per cent. in excess of the net premium of the English Table; and he adds, "Hence all the transactions of insurance by the Northampton Table are loaded with a certain degree of injustice, increasing in its amount and pressure as you descend to the earlier ages at which assurances are effected."

The "net" premiums for assuring £100 for *one year* is as follows, under the three following Mortality Tables. We add them for the purposes of comparison:—

Age	10	20	30	40	50	60	70
	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Northampton Table...	17 9	1 7 3	1 13 3	2 0 7	2 15 1	3 18 2	6 6 1
Carlisle Table..	8 9	0 13 9	0 19 7	1 5 3	1 6 1	3 5 0	5 0 8
Experience Table ...	18 2	0 14 2	0 16 4	1 0 1	1 10 11	2 18 11	6 6 1

The annual *invariable* premiums for the Assurance of £100 under the same Tables, are—

Age	10	20	30	40	50	60	70
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Northampton Table	1 14 1	2 3 7	2 13 4	3 8 0	4 10 7	6 7 4	10 0 4
Carlisle Table	1 3 4	1 9 11	1 19 0	2 12 0	3 12 5	5 15 10	9 8 0
Experience Table ...	1 3 10	1 9 6	1 18 1	2 12 1	3 16 8	6 0 6	10 2 0

In each case 3 per cent. interest is assumed.

The Carlisle Table, up to age 27, gives a rate of premium very slightly below that of the English Table, and at all the advanced ages rates a little above it. The Table just given shews that if interest be taken at 4 per cent., and a charge of 40 per cent. be added to the Carlisle Table, its premiums will differ little from those of the English 3 per cent. Table for males, with an *addition* of 20 per cent. We will not, however, pursue this point further at present. The following Tabular comparisons may be found useful:—

The Northampton 3 per cent. premium is equal to the
Carlisle 3 per cent. increased about 28 per cent.
And equal to the Carlisle 4 per cent. " 39 per cent.
" Experience 3 per cent. " 25 per cent.
" Experience 4 per cent. " 36 per cent.
" English 3 per cent. " 27 per cent.
" English 4 per cent. " 37 per cent.

As various allusions are made to "3 per cent.," "3½," and "4 per cent. Tables," it may be useful here to explain—although we believe we have previously referred to the fact—that these per centages relate to the *rates of interest* at which it is assumed the funds of the Office will be improved. In all monetary transactions which bear relation to remote periods, *interest*, as we have seen, enters largely into the consideration. Assurance calculations being of this class, the question of interest meets us at every point, and must be thoroughly understood before the principles upon which Life Offices are conducted can be comprehended. An annual payment or annuity of £1, invested at 3 per cent. for 50 years, amounts to £112; while at 5 per cent. during a like period it reaches £209, giving a difference on this small sum of nearly £100. Suppose the case then of a policy-holder paying to a Life Office £50 per annum for an assurance on his life, and living 50 years after the date at which the assurance commenced, it would make a difference of very nearly £5,000 to the Office, whether these premiums were invested at 5 instead of 3 per cent.! being a sum probably two-fold greater than that assured under the original policy. It is clearly then of the very highest importance to the Office that it does not calculate upon a *higher* rate of interest than it may thereafter realise, and to the assured that it does not assume a much *lower* rate than will probably be made, unless he is certain of a proportionate benefit in some other form, as by way of bonus addition, &c.

Mr. Hillman furnishes an example of the operation of interest on a larger scale than those already given:—

> "Suppose," he says, "*three* Institutions for the Assurance of Life invested the sum of £500,000 with its accumulating interest at 5, 4, and 3 per cent. respectively, and that the interests were receivable half-yearly—at the end of 20 years the following would be the amounts of the original principals with their respective accumulations:—

1st Office............	£500,000 at 5 per cent		£1,842,582.
2nd „	„ 4 „		£1,104,020.
3rd „	„ 3 „		£907,010.

The difference between the amount of the Office investing at 5 per cent. and the other that obtained only 3 per cent. is £435,522, which invested at 5 per cent. would produce an annual revenue of £21,776, an income more than sufficient to pay the expenses of management of half-a-dozen Assurance Companies."

Applying these considerations to life premiums, it is very clear that under a Table which assumes to make *four* per cent. of its money instead of three, the premiums for assuring any given sum ought not to be so large where the higher rate of interest prevails; and this is seen to be so. The following Table illustrates this point. In the case of the Northampton and Carlisle Tables the rates at both 3 and 4 per cent. are given for the sake of contrast. The remaining examples are confined to the 4 per cent. Tables—the two last distinguishing between male and female rates.

Net Annual Premiums required to assure £100, payable at Death, at 3 and 4 per cent interest, as deduced from the following Tables of Mortality, exclusive of any loading for expenses or contingencies.

Age.	Northampton Table.		Carlisle Table.		Combined Experience of 17 London Offices.	Government Tables. (Finlaison.)			English Life Table.		Age.
	3 per Cent.	4 per Cent.	3 per Cent.	4 per Cent.	4 per Cent.	4 per Cent.			4 per Cent.		
	Without distinction of Sex.		Without distinction of Sex.		Without distinction of Sex.	Male.	Female.	Male & Female.	Male.	Fem.	
	£ s. d.	£ s. d	£ s d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
20	2 3 7	2 0 6	1 9 10	1 6 4	1 5 11	1 12 5	1 5 0	1 8 8	1 8 5	1 7 9	20
25	2 8 1	2 4 9	1 14 0	1 10 4	1 9 5	1 14 7	1 7 8	1 11 1	1 12 5	1 11 2	25
30	2 13 5	2 9 10	1 19 0	1 15 1	1 13 11	1 17 9	1 10 11	1 14 4	1 17 1	1 15 4	30
35	2 19 10	2 16 0	2 4 8	2 0 5	1 19 9	2 2 6	1 14 11	1 18 8	2 2 9	2 0 6	35
40	3 7 11	3 3 11	2 12 0	2 7 6	2 7 4	2 9 0	1 19 8	2 4 4	2 10 0	2 6 11	40
45	3 17 11	3 13 8	3 0 4	2 15 6	2 17 8	2 18 3	2 6 0	2 12 1	2 19 5	2 15 6	45
50	4 10 7	4 6 2	3 12 5	3 7 3	3 11 6	3 12 0	2 15 0	3 3 6	3 12 4	3 7 4	50
55	5 6 4	5 1 7	4 10 11	4 5 8	4 10 0	4 9 2	3 8 1	3 18 7	4 11 5	4 5 0	55
60	6 7 4	6 2 4	5 15 9	5 10 8	5 15 1	5 9 7	4 6 2	4 17 10	5 17 3	5 9 4	60

It is seen, then, that almost any variation of rates may be derived from the same Table of mortality, and that they may be produced from either of two causes, viz., a variation in the rate of interest assumed, or a variation in the per centage of "loading." The careful reading of the following short Table will fully and clearly illustrate this point:—

Premiums to assure £100 by English Life Table.

"Net" annual premiums at age 35, taking the interest of money	Premiums with a "charge" of		
	10 per cent.	20 per cent.	30 per cent.
at 3 per cent. £2 7 0	£2 11 9	£2 16 5	£3 1 2
at 4 per cent. £2 2 9	2 7 0	2 11 3	2 15 7

Here are eight variations of premiums, and they might easily be increased to eighty.

Believing that enough has been said to familiarize the reader with the general principles attending the construction of rates of premium, we may pass on to the next stage of the subject; but we purpose stopping by the way, and taking a glance at the oft-debated question of the relative advantages of *high* and *low* premiums, so far as the interest of policy-holders is concerned.

It may seem hardly necessary to preface our observations by a truism which applies to many things besides life premiums, viz., that the *highest* rates are not necessarily the *dearest*, or the *lowest* the *cheapest*. The main consideration is the *quality* of the article the purchaser gets for his money; and this holds good whether the article purchased be a pair of boots or a policy of assurance.

Reverting to premiums, then, we see they are made up of two parts: the first that which is absolutely required to meet the risk of death: the other, the *addition* for the purpose of meeting expenses and contingencies. Now it is clear that if a person were purchasing a policy for £100 without any additions—or, as it is generally termed, "without profits"—the nearer the purchase money coincided with the *net premium*, under a recognised Life Table, the better. But if a person were assuring in a *Mutual* Office, where he was to participate either in profit or loss, the case might be very different. Assume for a moment the case of a Mutual Office which charged such low rates of premium as not to be sufficient to cover expenses, as well as the risk of death, what might be the position of the assured? That those who died early would receive their claims in full, while those who lived to a later period, and had therefore contributed more largely to the funds, would find the Society in such a position as to be unable to meet *their* claims. On the ground of justice therefore, as well as prudence, no Mutual Office should adopt a scale of rates which does not come within the range of being perfectly safe so far as human foresight can determine. Proprietary Offices, carried on simply as trading speculations, will take care never to run to *this* extreme.

Take the opposite case, of extremely high rates. A person assuring, without participation in profits, pays, under such circumstances, a price far above the *real* value of the article he purchases, and gets no possible advantage by so doing: because the *security* is just as great in a properly constituted Office with *moderate* rates: not even to say greater, for the Office with moderate premiums is far more likely to have a sufficient number of assurers at all ages to constitute a fair average; without which, as we have already stated, the business of Life Assurance can hardly be carried on with safety.

High rates in *Mutual* Offices are not open to the objections just stated: the objections, where they exist, are of a different class. Our own belief is, that moderate rates have a decided advantage over exorbitant ones under all circumstances, but like nearly all points in assurance practice, there is much to be said on both sides. In a Mutual Office, where the surplus or profits are divided on an equitable scale—that is to say, where the assurers at every age receive a return in the shape of profits at the same ratio as they contribute to the profits—or, to be still more precise on this all-important question, in an Office where the surplus is distributed with due regard to the addition or loading to the premiums *at all ages*, high rates of premium may be an advantage in this way—that the sum which the assured pays to the high-rate Office, over and above that which he would pay to an Office with moderate rates, being invested by the Office at a profitable rate of interest and on good security, and with its accumulations ultimately returned to him in the shape of profits, he may have realised a better rate of interest on this surplus, whatever it may be, than he could have made in any other manner. But take a case where the profits realised are distributed by some arbitrary rule, without regard to the principles of equity—as where the premiums are loaded the same *at all ages*, and the profits are distributed in such a manner as to favour the young against the old, or the old against the young—a manifest injustice will result to some portion of the assurers in such Offices

We do not purpose here to enter more particularly into the question of the distribution of profits—that is reserved for the next division: we will, therefore, only add that all the cases we have just "supposed" exist in reality, and in a much more aggravated form than we have yet presented them—and then proceed with the subject of premiums.

Having declared ourselves in favour of *moderate premiums*, by which, we may here explain, we refer to those which have during a series of years been found adequate to meet all the ordinary risks of life, and to leave a respectable surplus in addition: such rates, as of necessity they must, being derived from a Mortality Table having no glaring faults in its construction—having, we say, committed ourselves to this view, we purpose, as is our custom, to see how far the leading authorities on the subject will support us in such a conclusion; our desire here, as elsewhere, being simply to arrive at the truth.

Commencing with a competent, yet impartial, authority, Dr. Farr points to a truth, obvious after what has been already stated, yet important to be kept constantly in mind, viz.—*that the premium is increased by using a Life Table expressive of a high rate of mortality and a low rate of interest; and conversely it is diminished under opposite conditions.* He then adds:—

> "Although no absolute rule can be laid down, it appears to be the most judicious course in a *Proprietary Office* to use a Life Table which expresses the average mortality of the classes of people who insure; to take interest at 3 per cent., which is the natural average rate where there is no risk, and the rate most likely to be realised with certainty in transactions extending over a long series of years; and finally to make such an addition as while it guarantees, to some extent, the proprietors from loss, yields them a fair profit." (Twelfth Annual Report.)

Nearly all the writers on the subject of premiums take an opportunity of having a "quiet fling," at the Northampton Table. Dr. Farr boldly asserts that—

> "By its use the Proprietary Offices have exacted enormous and unequal premiums from the portions of the community *who happened to be ill-versed and ill-instructed in the intricate science of Life Assurance.*"

Another writer more quietly, but equally unmistakably, says:—

> "Where is the fairness of using a Table which demands premiums very much larger than the real risks from the *young*, while it admits *older* lives on more easy terms? Ought the older lives to enjoy any privilege in this respect? Quite the reverse; for belonging to a class which is less known, and extending also in smaller numbers with results therefore more subject to fluctuation, the per centage added to the premiums deducted from a true Table ought rather to be larger in the case of old lives than in that of young ones. The best customers, both in number and quality, ought not to come the worst off."

A writer in *Chambers' Information*, equally to be commended for his impartiality and clearness, enters into a more minute comparison:

> "The high rates are defended on various grounds. A *Company* making high charges, and consequently good profits, may be supposed to have more stability than one

making moderate charges; while of a *Society*,[*] pursuing business on the same plan, it may be said, that the overplus becomes a kind of bank deposit, to be ultimately realised by the depositor. With regard to Companies, the defence may, or not be, sound according as business is managed discreetly or otherwise. The defence is of greater force with regard to Societies; but even there it is not free from objections. The high-rate Societies, proceeding upon the Northampton Table, commit a constant injustice to the young and middle-aged members in favour of the old. The needless amplitude tends to occasion a careless, a less careful, use of them in constructing the concern: there is, for instance, a greater temptation to give large commissions to persons who, as it is said, bring business. But the greatest objection to a needless high scale is, that it must act *as an obstruction to the first step in what is generally one of the most important moral acts of a lifetime*—the effecting of Life Assurance. We would here be understood to draw a broad distinction between an unsound low rate, and one which is sufficient to satisfy a reasonable anxiety for security. Rates much below the first of the above three cases [referring to some examples taken from the Scotch Offices] would be decidedly unsafe, taking all contingencies into account. On the other hand, it ought certainly to be possible to transact perfectly safe business upon a *medium of that scale.* Those who, for further caution, prefer the next scale, must be said to pay highly for it, if they resort to a Company which gives no share of profits to the assured: if they become members of a Society, large periodic additions will *be no more than their due.*"

Mr. Charles Babbage says,—

"I imagine it will not require much argument to show, that the more proper mode would be to determine, as early as we can, the real value of the risk, and consequently the amount of premium just sufficient to meet it, and to add to this such a per centage as will defray the expenses of management, and allow of a sufficient dividend to the proprietors, whose capital is a guarantee to the assured."

This is precisely the process we have shown in the Table given at pages 260 and 261.

Professor De Morgan, taking a more extended view of the subject, says,—

"But there are reasons why the premiums of an Insurance Office need not be so high as the very limited number of data in their tables might seem to require. If the fluctuations from the average, which are within the most cautious definition of reasonable probability, were all to be encountered at once, or *might be* at once it is difficult to say what premiums should be considered too high. *But this cannot be the case*, unless, indeed, a pestilence might single out the members of an Insurance Office, or an earthquake should, by some extraordinary event, swallow them all up in the place where, by a most remarkable coincidence, they were all assembled together. Such extreme cases," he continues, "are not worth consideration; and we may take the chances of life and death as distributed over a large number of years. In the meantime, *the surplus fund increases at compound interest*, and the problem is not whether a given number of lives will, on the whole, drop *so much before the predicted time* that a given fund will be destroyed, but whether this can happen *so fast that it will outrun the increase of the fund at compound interest.*"

The author of "*Life Assurance: its Schemes, its Difficulties, and its Abuses*," takes up the other side of the question. Referring to *cheap premiums*, which he defines to be "rates which are *considerably* below the average demanded of the general body of the Offices," he says,—

"We speak harshly of this system of cheap premiums, because we feel that it is an evil daily becoming more formidable. We are sorry to say it has become a common boast of many new Offices, in their public advertisements, that they offer *the lowest rates of premiums possible, without compromising the safety of the Institution!* Such advertisements speak volumes. Who, we would ask, would open-eyed venture to place so sacred a trust, as the future provision for a young family, in the hands of a Society which spontaneously acknowledged the charge of approaching so closely to the line which divides security from insecurity? Should we be considered in possession of our senses were we to risk our necks by travelling on a railroad, the engineer of which, at the outset of the journey, promised *to put the engine to its extremest speed*, with the comfortable assurance that, however great the pressure on the boiler might become it should be preserved just short of an actual explosion? Absurd as it may appear, such a promise on the part of the engineer, is not more preposterous than that daily held out *by the cheap premium* Offices.

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[*] The distinction between "Company" and "Society" must be observed with attention here as in other parts of this work. The former applies to a *proprietary* or *mixed* Office—the latter to MUTUAL Offices only.

A writer in the *North British Review*, already several times quoted, speaking particularly of the high-rate Offices, says,—

"The prevailing systems are, in reality, most unfavourable to the spread of Life Assurance among the general body of society. The grand object should be, to promote its extension among all who can avail themselves of its benefits. *Instead of doing this by offering Assurance at low, but safe rates*, these are kept so high as to deter many from attempting to assure, and to defeat many more who make the attempt, all in order to produce a surplus fund for the long livers. New entrants not only pay an adequate premium, but, in addition, what may be called a Tontine-tax, in the distribution of which they may never share; *and thus Life Assurance, instead of being simplified, and cheapened, and popularized as it might be, within the limits of perfect safety, is clogged and complicated, by the super-addition of an expensive system, the very opposite of Life Assurance in its nature and tendency.*"

The writer touches upon a point which will be very fully discussed in our chapter on Bonuses. It does not necessarily follow that the "loading" should be converted into a *Tontine Tax*, although we grant that this is sometimes the case. All depends upon the periods and mode of division of the surplus. The same writer will then be allowed space for the further development of his views. Meantime, we confine ourselves to the immediate question of the relative advantages of high and low rates.

The writer of some able papers in the *Morning Herald* (Dec. 1849), speaking of the evil consequences resulting from the variations in the several Mortality Tables, says,—

"Hence also the various apparent differences which still exist amongst the Offices, both as respects the rates of premium charged, and the per centage of profits returned to assuring parties. These differences cause much perplexity, and go a great way towards limiting the operations of these Societies among the people at large who cannot clearly comprehend why *some establishments should return enormous bonuses*, while others return but little, *and some none at all*. They have but limited means of judging why or wherefore such distinctions should arise, or of seeing clearly what those who pay much attention to the subject will understand, that the general results of all such Associations (*honest and proper management being granted*) are nearly alike, *security and profits* being more or less insured in proportion to the high or low charge of premium if at all within the barrier established by the *Carlisle* and the *Northampton* Tables. *It is for the assurers themselves to decide whether they are disposed to pay in advance high premiums, proved to be really unnecessary, satisfied with the promise of high bonuses in return, or are desirous to restrict their actual outlay in premiums to an amount which, though more moderate, is yet securely based on modern experience.*"

On another occasion, Professor M. de Morgan compares the relative advantages resulting to the Offices as between high and low rates:—

"According to the *Carlisle* Table, the premium which should now be paid to insure £100 upon the life of an individual aged 20 is £1 7s., at *four* per cent. According to the *Northampton* Table, at 3 per cent., the same premium should be £2 4s. Taking the first premium, and assuming its Table, the Office will not be sure of avoiding loss until the party has lived 35 years, by which time the premiums, with their accumulated interest, will have passed £100. It is little more than 2 to 1 that a life of such an age shall live beyond 32 years after the contract. Taking the premium of the Northampton Table, the party must live 28 years before the Office can gain by him; and it is about 10 to 7 that he will outlive this term."

Mr. Sturrock, who is the champion of low rates, as well as Mutual Offices, says:—

"It must appear, from the full investigations that have been made into the law of mortality in this country, and the results of the long experience of numerous Companies, that the premiums charged by the greater part of the older Offices are exorbitant, and unnecessary for the safety of the business of Life Assurance. It follows that the public can derive every advantage of Life Assurance from Companies using the more moderate premiums. It is most important that the knowledge of this fact should be widely spread, that the benefit of assurance may be extended to the larger and more numerous class of the community, who have hitherto been discouraged by extravagant premiums from availing themselves of its benefits."

Mr. George J. Soper, in his clever pamphlet, also discusses the subject impartially:—

"Some Societies charge *higher premiums* than others which profess precisely the same principles, but the object of, and the plea for, such extra charges, such advanced rates beyond the actual law of mortality, are generally well understood to be the desire to gain a current popularity by making large returns in the name of bonuses or profits. Against such a line of policy *no fair objection* can be urged, for the choice is with the applicants, and, as before observed, the law of mortality is so well known that the average life risk may be ascertained to a very close figure. At all events, it is perfectly right, just, and proper,—it is, in fact, demanded by common prudence to require a rate of premium more or less above the present accepted value standard of mortality. There being, therefore, no deception in the matter, persons are left to decide for themselves, whether they would prefer a high premium scale, relying on the Company returning all the extra charges in *after bonuses* (for the Companies have that option, and therefore *high premiums may not always be followed by corresponding bonuses*), or the lower, though still an authorised and acknowledged *safe* standard, which could not, of course, make any great impression with bonuses, for the certain fulfilment of their expectations. all such apparently enticing offers should be as lanterns and watchmen before the house!! In our opinion, any Society offering prominently the pretended *immediate advantage* of a rate of contribution much below the average, or, in other words. cheap premiums of Assurance, so far from conferring a benefit on the assurer is in reality, by that very circumstance. holding out to him a sign which ought to determine him in the rejection rather than in the selection of an Office."

But we have already anticipated these objections, and need not pursue them further here.

Mr. Neison stated before the Select Committee, in 1853, boldly, "all the premiums charged are in practice, whatever they may be in theory, much more than adequate to meet the liabilities. From the experience I have of Life Institutions, that is the practical view I take of the subject."

Mr. Riley said to the same Committee, "I should observe, that the tendency of Tables of Premiums of late years has been rather to increase than to decrease; there is an impression that Offices are getting lower in their terms; the result of my observations is, that they are getting higher; *and it is necessary that they should get higher*, for they have to spend a great deal of money in the acquisition of business, which older Offices have not."

It would, however, appear to us very unfair, that rates should be formed sufficiently high to meet the necessarily large preliminary outlay of establishing an Office. *This* falls within the province of capital in a *Mixed* or Proprietary Office, or of the guarantee fund in a *Mutual* one. It would be a great barrier to the progress of Life Assurance, that such charges should be provided solely by the premiums. Too much of the premiums are, indeed, already expended for such purposes: hence the failure of so many Offices of late.

Out of the preceding considerations the following conclusions may be fairly drawn:—

1st.—That with regard to Proprietary Offices the premiums to be equitable certainly ought not much to exceed the net rates under the 3 per cent. English Table No. 2.

2ndly.—As to *Mutual* Offices, that provided the distribution of the profits be conducted on an equitable plan, with due regard to the "loading" of the premiums—which is held to be the chief source of profit—it is immaterial what the rate of premiums may be, provided it be not *too low;* and

3rdly.—As to *Mixed* Offices, in which the proprietors take some portion of the profits with policy-holders, the rates should be so constructed as to yield, under proper management, a fair share of profit, always having especial regard to the interests of those who contribute the profits, rather than to those who simply participate in a portion of them; and with this view such rates as those given by the 3 per cent English Life Table No. 2, will be found abundantly sufficient.

At the conclusion of this chapter will be given Tables of rates of all the existing Life Offices, at each five years of age, from 15 to 60 (the usual limits in each direction) under an arrangement which will be found both equitable and convenient.

In comparing rates of premium a moment's reflection will shew that a simple alphabetical arrangement of the Offices is of the smallest possible value; calculated, indeed, rather to mislead than to assist. The eye first rests upon say a *Mutual* Office, then a *Proprietary* one, and next a *Mixed* one; and astonishment is expressed at the variation in the terms thus presented. The *Mutual* Office having to raise a guarantee fund out of its premiums necessarily charges much higher premiums than a purely *Proprietary* Office, which having a subscribed capital, and having no bonus additions to make to its policies, can naturally afford to issue policies at minimum rates; that is with such a loading only upon the net premiums as will leave a fair margin of profit for the shareholders on the business transacted. The *Mixed* Offices coming between the two with medium rates.

Here, then, we see that the preliminary step to any comparison of premiums is to ascertain the principles or constitutions of the several Offices placed in contrast. This is precisely what is done in the following Tables. The *first* Table gives the rates of the MUTUAL Offices only; the *second*, of the MIXED Offices; and the *third*, the rates of the purely PROPRIETARY, or non-bonus giving Offices, and of the Proprietary branches of the Mixed and Mutual Offices. This arrangement will greatly facilitate comparisons, not only between the Offices, but also in regard to the probable or prospective advantages.

One or two of the offices, it will be seen, have a special set of rates for female lives. We have already offered some observations and statistics on this point in our Chapter on Mortality Tables, and will not add anything further on the subject here.

The following Table, prepared by Mr. Sturrock, and the note appended to it, viewed in conjunction with the other Tables in this chapter, will be found useful in judging of the equity of the rates in the Tables which follow it:—

ANNUAL PREMIUMS FOR ASSURING £100

	Age 20.	Age 30.	Age 40.	Age 50.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
A	2 8 7 2 1 6	2 13 5 2 11 1	3 7 11 3 5 6	4 10 8 4 8 4	6 7 4 6 5 4
B	1 14 7	2 4 8	2 19 9	4 8 0	7 0 7
C	1 11 9	2 2 0	2 17 1	4 2 0	6 10 9
D	1 15 8	2 1 6	2 14 9	4 1 7	6 6 7
E	1 5 11	1 13 11	2 7 4	3 11 6	5 15 1
F	1 6 4	1 15 1	2 7 6	3 7 8	5 10 8

"The premiums opposite the letter A have been used by more than twenty Offices, which have been established from ten to fifty years and upwards, and in every instance they have made very large profits. Premiums ranging between the rates opposite A and B have been used by about thirty Offices; and where they have been long enough established to exhibit a state of their affairs, the premiums in every case have yielded large bonuses. The premiums opposite B, are those of the London Economic Office (Mutual), of twenty-three years' standing (in 1846), in which bonuses paid out of *three-fourths* of the profits amounted on an average, at the third division in 1844, to no less than 83 per cent. on the premiums paid. The premiums opposite C, are much about these which have been charged by long-established Companies, making use of the non-participating scale; and the business of all these Offices has been successful. The premiums opposite D, are those of the Scottish Provident (Mutual) . . . . . . and have been found to yield a very considerable surplus. The premiums opposite E, are those deduced from the combined experience of seventeen old-established Offices. And those opposite F, are founded on the Carlisle Table, reckoning money in the two last cases at 4 per cent."

It is believed that the following Tables contain the rates of all the existing Offices correctly classified; but so many changes have lately occurred with the Offices that it is very difficult to say on one day what may be correct on the following. Any errors which may be found will be purely the result of accident, and, therefore, if pointed out in time, will be rectified as far as may be in our publisher's power when the work is made up into a volume.

The Offices not found named in our Table of non-participating rates, either do not issue non-participating policies as the *Economic*, the *Sun*, the *National Provident*, the *Scottish Equitable*, *Scottish Provident*, and several others, or do not publish them, as the *Scottish Widows' Fund*, *Universal*, *Law Life*, *Kent Mutual*, and one or two other Offices.

TABLES OF RATES

OF ALL THE

EXISTING LIFE OFFICES.

TABLE I.

RATES OF THE *MUTUAL* OFFICES.

TABLE II.

RATES OF THE *MIXED* OFFICES.

TABLE III.

RATES OF THE *PROPRIETARY* OFFICES.

TABLE IV.

RATES OF THE *PROPRIETARY* BRANCHES OF THE *MIXED* AND *MUTUAL* OFFICES.

MUTUAL OFFICES.

Table of Rates of all the present Mutual Offices, at the following ages, to secure £100, payable at Death, with participation in profits.

	Age 15.	Age 20.	Age 25.	Age 30.	Age 35.	Age 40.	Age 45.	Age 50.	Age 55.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Aberdeen Mutual	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...
Brighton & Sussex Mut. Prov.	... ...	1 15 5	... ...	2 5 3	... ...	3 1 10	... ...	4 9 2	... ...	... ...
British Emp. { Males	1 13 4	1 17 6	2 2 4	2 8 3	2 15 4	3 4 2	3 15 7	4 11 1	5 13 7	7 4 0
British Emp. { Females	1 12 9	1 16 6	2 0 11	2 6 1	2 12 6	3 0 6	3 10 11	4 5 2	5 6 1	6 14 9
British Equitable	... ...	1 18 1	2 3 0	2 9 0	2 16 6	3 6 0	3 18 2	4 14 3	5 16 4	7 7 2
British Mutual	1 11 2	1 15 8	1 18 0	2 1 6	2 6 10	2 14 9	3 5 9	4 1 7	5 1 11	6 6 7
British Workman's	... ...	1 18 1	... ...	2 9 8	... ...	3 4 11	... ...	4 10 8	... ...	7 4 11
Clergy Mutual	1 11 0	1 15 0	2 0 2	2 6 4	2 13 0	3 2 2	3 12 4	4 7 4	5 10 4	7 1 6
Economic	1 10 8	1 14 7	1 19 0	2 4 3	2 10 11	2 19 9	3 11 9	4 7 6	5 4 8	6 7 5
Equitable	1 18 7	2 3 7	2 8 1	2 13 5	2 19 10	3 7 11	3 17 11	4 10 8	5 6 4	6 7 4
Friends' Provident	1 14 2	1 17 6	2 1 3	2 5 9	2 11 2	2 18 1	3 7 0	3 19 3	4 16 8	6 1 9
Great Britain	... ...	2 1 9	2 6 0	2 11 4	2 18 4	3 7 10	4 0 7	4 17 8	6 0 8	7 11 9
Hand-in-Hand	1 18 7	2 3 7	2 8 1	2 13 5	2 19 10	3 7 11	3 17 11	4 11 6	5 12 8	7 1 3
Kent Mutual	1 11 7	1 15 3	1 19 11	2 5 8	2 13 1	3 2 5	3 15 1	4 12 0	5 14 5	7 4 6
London Life	... ...	... ...	2 13 6	2 19 3	3 7 0	3 17 0	4 9 9	5 7 6	6 9 6	7 15 0
Marine and General Mutual	... ...	... ...	2 4 3	2 10 2	2 17 5	3 6 3	3 17 4	4 11 1	5 8 8	6 11 10
Medical, Legal, and General	1 10 10	1 15 6	2 0 1	2 6 2	2 13 0	3 1 2	3 12 3	4 7 8	5 9 11	6 19 0
Metropolitan	1 15 8	1 19 6	2 4 0	2 9 9	2 17 5	3 6 4	3 18 11	4 12 0	5 9 1	6 11 6
Mutual	1 15 7	1 19 11	2 4 7	2 10 2	2 17 5	3 7 6	3 17 11	4 12 7	5 14 4	7 2 0
Mutual Provident Alliance	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...
National	1 16 1	2 0 8	2 5 0	2 10 4	2 17 1	3 5 9	3 17 2	4 12 8	5 13 8	6 19 10
National Mutual	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...
National Provident	1 15 2	1 19 4	2 4 3	2 10 2	2 17 5	3 6 3	3 17 4	4 11 1	5 8 8	6 11 10
Norwich Union	... ...	1 19 6	2 3 8	2 8 10	2 14 10	3 2 0	3 11 0	4 6 0	5 5 3	6 7 3
Provident Clerks'	1 11 11	1 16 1	2 0 1	2 6 4	2 13 5	3 2 8	3 16 1	4 12 2	5 17 4	7 11 7
Reliance	1 13 1	1 17 7	2 2 11	2 9 4	2 16 9	3 5 10	3 18 0	4 14 2	5 18 8	6 18 6
Scottish Amicable	1 16 5	2 2 1	2 5 10	2 11 9	2 17 6	3 6 3	3 15 6	4 9 1	5 5 1	6 6 4
Scottish Equitable	1 17 0	2 2 1	2 6 6	2 11 9	2 18 2	3 6 3	3 16 4	4 9 1	5 5 1	6 6 4
Scottish Friendly	... ...	1 18 10	2 3 11	2 10 0	2 16 9	3 5 6	3 15 5	4 10 7	5 12 6	7 1 10
Scottish Provident	... ...	1 15 8	1 18 0	2 1 6	2 6 10	2 14 9	3 5 9	4 1 7	5 1 11	6 6 7
Scottish Widows'	1 16 5	2 2 1	2 5 10	2 11 9	2 17 6	3 6 3	3 15 6	4 9 2	5 5 1	6 6 4
Southampton Mutual	... ...	1 18 4	... ...	2 11 8	... ...	3 8 4	... ...	4 15 0	... ...	7 5 0
United Brothers	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...
United King. Temperance	1 13 3	1 17 4	2 2 7	2 8 10	2 17 6	3 4 11	3 15 5	4 10 6	5 13 8	7 4 9
Victoria Benefit	... ...	... ...	2 2 6	2 9 2	2 16 8	3 6 6	3 17 8	4 11 10	5 13 9	6 19 0
Western Counties & London	... ...	1 16 8	2 1 9	2 7 11	2 14 9	3 3 9	3 14 0	4 8 9	5 11 5	7 2 0

MIXED OFFICES.

Table of Rates of all the present Mixed Offices, at the following ages, to secure £100 payable at Death, with participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Albert	1	16	5	1	19	8	2	4	1	2	9	9	2	17	0	3	6	0	3	17	7	4	13	9	5	15	5	7	4	2
Albion	1	14	3	1	18	3	2	3	3	2	9	6	2	17	6	3	7	9	4	1	6	4	19	9	...	...	...	...	...	...
Alliance	1	12	8	1	16	11	2	2	6	2	9	2	2	16	8	3	6	6	3	17	8	4	14	2	5	19	11	7	14	11
Argus	1	12	4	1	15	10	2	0	1	2	5	5	2	12	1	3	0	7	3	11	10	4	6	8	5	6	4	6	12	9
Atlas	...	...	...	1	19	4	2	4	3	2	10	2	2	17	5	3	6	3	3	17	4	4	11	1	5	8	8	6	11	10
Birmingham Alliance	...	...	...	1	18	4	2	2	9	2	9	2	2	15	10	3	5	0	3	15	5	4	10	0	5	10	5	6	17	1
British Equitable	1	13	6	1	18	1	2	3	0	2	9	0	2	16	6	3	6	0	3	18	2	4	14	3	5	16	4	7	7	2
British Prudential	...	...	...	1	18	8	2	3	3	2	8	10	2	14	11	3	3	0	3	12	2	4	5	11	5	7	8	7	1	8
Briton	...	...	...	1	18	4	2	3	10	2	10	1	2	17	6	3	6	9	3	16	2	4	10	10	5	14	8	7	5	6
Caledonian	1	15	6	1	19	5	2	4	2	2	9	10	2	16	1	3	4	2	3	13	4	4	7	0	5	7	8	6	15	7
Church of England	...	...	...	1	17	4	2	1	6	2	6	10	2	13	11	3	3	6	3	16	2	4	13	4	5	16	5	7	7	6
City of Glasgow	1	12	11	1	17	0	2	2	3	2	8	5	2	15	5	3	4	6	3	14	10	4	9	10	5	11	9	6	16	4
Clerical and Medical	...	...	...	1	17	3	2	2	6	2	8	9	2	15	9	3	5	0	3	15	6	4	10	9	5	13	9	7	4	9
Clergy Mutual	...	...	...	1	15	0	2	0	2	2	6	4	2	13	0	3	2	2	3	12	4	4	7	4	5	10	4	7	1	6
Commercial Union	...	...	...	1	18	10	2	3	8	2	9	5	2	15	9	3	4	2	3	13	10	4	7	8	5	9	2	6	17	8
Crown	...	...	...	1	15	10	2	1	2	2	7	4	2	14	6	3	3	4	3	15	0	4	12	4	5	13	8	7	1	2
Eagle	1	18	4	2	1	7	2	5	7	2	10	8	2	17	1	3	5	5	3	16	6	4	11	4	5	10	11	6	17	4
Edinburgh	1	13	1	1	17	4	2	2	0	2	7	7	2	14	6	3	3	2	3	14	2	4	9	0	5	9	1	6	15	8
Emperor	1	14	0	1	18	4	2	3	4	2	9	3	2	16	6	3	5	7	3	17	2	4	13	0	5	16	0	7	7	1
Empire	...	...	...	2	1	1	...	...	...	2	10	7	...	...	...	3	4	11	...	...	...	4	8	6	5	6	11	6	11	6
English & Scottish Law	1	15	3	1	19	6	2	4	6	2	9	9	2	16	6	3	6	6	3	17	9	4	10	9	5	13	9	7	4	6
Equity and Law	1	14	1	1	18	3	2	3	2	2	8	10	2	15	10	3	4	6	3	15	7	4	10	9	5	12	6	7	2	5
European	1	14	0	1	18	0	2	2	9	2	8	2	2	15	0	3	3	9	3	14	11	4	10	3	5	10	6	6	17	9
General	1	14	11	1	18	2	2	2	10	2	8	5	2	15	1	3	3	7	3	14	10	4	10	3	5	8	11	6	13	0
General Provincial	...	...	...	...	...	...	2	1	3	2	7	2	2	14	0	3	3	8	3	14	10	4	9	8	5	11	0	6	19	0
General Provident	...	...	...	1	17	3	2	1	1	2	9	4	2	13	6	3	5	11	3	12	3	4	14	2	5	13	8	6	18	6
Gresham	1	15	3	1	18	8	2	2	11	2	8	3	2	14	11	3	3	8	3	15	4	4	10	11	5	11	3	6	19	3
Guardian	1	16	2	2	1	0	2	5	4	2	10	7	2	17	0	3	5	0	3	14	11	4	8	0	5	4	8	6	7	2
Hercules	...	...	...	1	15	5	2	0	0	2	5	9	2	13	1	3	2	6	3	15	3	4	12	1	5	14	5	7	4	8
Imperial	...	...	...	2	0	10	2	5	0	2	10	3	2	16	8	3	4	11	3	15	10	4	10	2	5	8	11	6	14	1

MIXED OFFICES.

Table of Rates of all the present Mixed Offices, at the following ages, to secure £100 payable at Death, with participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Imperial Union	...	...	...	1	18	9	...	...	...	2	8	5	...	...	...	3	4	6	...	...	...	4	11	9	5	11	5	6	19	11
Insurance Co. of Scot	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
International	1	12	10	1	17	4	2	2	9	2	9	3	2	16	6	3	5	3	3	17	0	4	13	6	5	17	2	7	8	4
Lancashire	1	14	6	1	17	0	2	1	0	2	6	0	2	12	3	3	0	6	3	11	9	4	6	9	5	4	4	6	7	6
Law Life....................	1	18	7	2	3	7	2	8	1	2	13	5	2	19	10	3	7	11	3	17	11	4	10	8	5	6	4	6	7	4
Law Union	...	...	...	1	18	8	2	3	7	2	9	4	2	16	7	3	5	3	3	17	0	4	12	0	5	12	8	7	1	5
Law Property & Trust	1	14	5	1	19	0	2	3	10	2	9	5	2	16	5	3	5	6	3	17	2	4	12	7	5	13	4	7	1	3
Legal and General	...	...	...	2	0	4	2	5	1	2	10	9	2	17	7	3	5	11	3	16	7	4	10	9	5	11	0	6	19	5
Life Assoc. of Scotland	...	...	...	1	18	6	2	3	10	2	10	0	2	17	0	3	5	2	3	17	2	4	13	4	5	13	4	6	18	2
Life Investment	...	...	...	1	17	5	2	2	7	2	8	10	2	15	10	3	5	0	3	14	0	4	7	0	5	9	1	6	19	0
Liverpool and London	...	...	...	1	19	0	2	3	10	2	9	5	2	16	5	3	5	5	3	17	3	4	12	7	5	13	4	7	1	3
London Assurance	...	...	...	2	0	2	2	5	0	2	10	8	2	17	0	3	5	1	3	15	10	4	10	7	5	8	11	6	12	5
London and Lancashire	...	...	...	1	15	10	2	0	10	2	6	10	2	13	6	3	2	4	3	12	5	4	6	10	5	9	1	6	18	11
London and Northern. .	...	...	...	1	19	8	...	...	...	2	9	9	...	...	...	3	6	0	...	...	...	4	13	9	5	15	5	7	4	2
London and Southwark	...	...	...	1	18	0	2	3	0	2	9	4	2	16	5	3	5	8	3	16	3	4	12	2	5	15	10	7	7	9
London and Prov. Law	...	...	...	2	1	0	2	5	4	2	10	7	2	17	4	3	5	9	3	16	5	4	10	6	5	9	5	6	16	4
Midland Counties	1	17	3	2	1	6	2	4	10	2	9	11	2	16	2	3	4	8	3	15	0	4	9	6	5	7	11	6	13	10
Nat. Assoc. of Ireland	...	...	...	1	19	4	2	4	3	2	10	2	2	17	5	3	6	3	3	17	4	4	11	1	5	10	4	6	16	0
National Guardian......	...	...	...	1	17	1	...	...	...	2	8	6	...	...	...	3	4	8	...	...	...	4	6	8	5	8	9	6	18	8
National Union	...	...	...	1	18	1	2	2	11	2	8	11	2	16	5	3	5	11	3	18	2	4	14	2	5	16	4	7	7	2
North British	...	...	...	1	18	2	2	3	5	2	9	10	2	17	0	3	6	1	3	16	7	4	11	11	5	11	2	6	16	2
Northern	...	...	...	1	16	9	2	1	11	2	8	0	2	14	11	3	3	11	3	14	3	4	7	4	5	7	3	6	16	8
Nottingham and Derby	1	10	11	1	15	5	2	0	6	2	6	2	2	12	11	3	0	11	3	11	7	4	5	2	5	1	6	6	1	6
Patriotic (Irish)	1	13	2	1	17	4	2	2	7	2	8	9	2	15	10	3	5	0	3	15	4	4	8	11	5	9	1	6	18	11
Pelican	1	15	0	1	19	3	2	4	4	2	10	4	2	17	7	3	6	5	3	17	4	4	10	7	5	6	4	6	7	4
Planet	...	...	...	1	18	4	...	...	...	2	8	5	...	...	...	3	4	5	...	...	...	4	12	11	5	14	7	7	3	11
Provident	...	...	...	1	19	4	2	4	3	2	10	2	2	17	5	3	6	3	3	17	4	4	11	1	5	8	8	6	11	10
Provincial Union	...	...	...	1	18	6	2	5	4	2	10	8	2	17	0	3	6	4	3	14	11	4	16	0	5	17	8	7	4	0
Provincial (Welsh)......	1	16	2	2	1	0	2	5	4	2	10	7	2	17	0	3	5	0	3	14	11	4	8	0	5	4	8	6	7	2
Queen	1	12	0	1	15	8	2	0	4	2	6	1	2	13	6	3	3	0	3	14	9	4	9	6	5	10	6	6	17	9

MIXED OFFICES.

Table of Rates of all the present Mixed Offices, at the following ages, to secure £100 payable at Death, with participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Rock	1	18	7	2	3	7	2	8	1	2	13	5	2	19	10	3	7	11	3	17	11	4	10	8	5	6	4	6	7	4
Royal	...	...	...	1	19	4	2	4	2	2	9	9	2	16	2	3	4	1	3	14	6	4	8	3	5	10	4	6	18	7
Royal Exchange	1	16	8	2	0	11	2	5	11	2	11	7	2	18	2	3	6	3	3	17	0	4	11	3	5	8	6	6	10	7
Royal Farmers	1	13	4	1	16	10	2	1	2	2	7	5	2	14	6	3	3	4	3	15	0	4	10	7	5	10	2	6	18	7
Sceptre	...	...	...	1	17	6	2	2	4	2	8	8	2	15	8	3	4	8	3	15	4	4	10	6	5	13	4	7	4	6
Scottish National	...	...	...	1	17	6	2	2	8	2	9	0	2	6	10	3	4	6	3	14	0	4	8	6	5	9	6	...	...	...
Scottish Provincial	1	12	3	1	16	5	2	1	8	2	8	1	2	15	2	3	4	6	3	13	9	4	7	3	5	8	1	6	15	10
Scottish Union	1	12	11	1	18	5	2	4	3	2	9	11	2	16	9	3	5	0	3	15	1	4	7	9	5	9	3	6	15	9
Sovereign	...	...	...	1	19	4	2	3	10	2	9	4	2	16	3	3	5	2	3	16	10	4	12	2	5	12	5	6	19	6
Standard	1	16	0	2	1	1	2	5	4	2	10	7	2	16	11	3	4	11	3	14	9	4	8	6	5	6	11	6	11	6
Star	1	13	2	1	17	4	2	2	7	2	8	9	2	15	11	3	4	11	3	15	5	4	10	6	5	13	7	7	4	9
Sun	1	12	8	1	16	11	2	2	6	2	9	2	2	16	8	3	6	6	3	17	8	4	14	2	5	19	11	7	14	11
Union	...	...	...	2	1	5	2	5	8	2	10	8	2	16	10	3	4	7	3	16	0	4	8	4	5	6	4	6	15	0
United Counties	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
United Kent	1	16	6	2	0	0	2	4	3	2	9	8	2	16	3	3	4	3	3	15	11	4	10	5	5	9	6	6	16	7
Universal	1	15	0	1	18	8	2	3	3	2	8	10	2	14	11	3	3	0	3	12	2	4	5	6	5	5	10	6	13	2
University	1	16	8	2	1	5	2	5	9	2	10	9	2	16	11	3	4	7	3	14	1	4	7	6	5	5	4	6	7	4
West of England	1	15	11	2	0	11	2	5	8	2	11	3	2	17	11	3	6	1	3	16	2	4	9	1	5	5	6	6	7	4
Westminster & General	1	13	3	1	17	4	2	2	7	2	8	10	2	15	10	3	5	0	3	15	5	4	10	6	5	13	8	7	4	8
Whittington	1	11	6	1	15	6	2	1	0	2	7	4	2	14	8	3	4	2	3	15	0	4	10	8	5	12	0	6	19	6
Yorkshire	...	...	...	1	18	6	2	3	7	2	9	7	2	16	3	3	5	0	3	14	10	4	9	1	5	10	10	7	0	0

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Albert	...		...	1	15	2	1	18	3	2	4	10	2	11	0	3	0	3	3	9	11	4	6	7	5	6	3	6	14	8
Albion	...		...	1	13	5	1	18	1	2	3	7	2	9	11	2	18	0	3	7	5	4	0	10	5	1	6	6	9	3
Alliance	1	9	5	1	13	3	1	18	3	2	4	3	2	11	0	2	19	11	3	9	11	4	4	9	5	8	0	6	19	6
Argus	1	8	3	1	11	10	1	15	10	2	0	7	2	6	8	2	14	10	3	5	11	4	0	11	4	19	3	6	0	10
Atlas	1	11	8	1	15	5	1	19	10	2	5	2	2	11	8	2	19	7	3	9	7	4	2	0	4	17	10	...		...
Birmingham Alliance	...		...	1	14	2	1	19	2	2	3	9	2	11	5	2	17	6	3	9	5	4	0	10	5	0	5	6	7	11
British Empire Mutual	...		...	1	13	0	1	17	2	2	2	6	2	8	6	2	16	3	3	6	4	3	19	7	4	17	5	6	2	6
British Equitable	1	11	0	1	15	3	1	19	9	2	5	4	2	12	4	3	1	1	3	12	4	4	7	3	5	7	9	6	16	3
British Prudential	...		...	1	14	10	1	18	11	2	4	0	2	9	6	2	16	9	3	5	0	4	1	4	5	1	9	6	12	8
Briton	...		...	1	13	9	1	18	7	2	4	1	2	10	8	2	19	0	3	8	7	4	3	4	5	4	11	6	12	9
Caledonian	1	8	11	1	12	6	1	17	1	2	1	7	2	6	10	2	14	6	3	5	9	3	19	9	5	0	0	6	3	1
Church of England	...		...	1	13	11	1	17	9	2	2	7	2	9	1	2	17	8	3	9	4	4	4	11	5	5	10	6	14	2
City of Glasgow	1	9	2	1	12	11	1	17	6	2	3	0	2	9	1	2	17	2	3	6	5	3	19	8	5	0	0	6	2	8
Clerical and Medical	...		...	1	13	6	1	18	3	2	4	0	2	10	3	2	18	6	3	8	0	4	1	6	5	2	3	6	10	3
Commercial Union	...		...	1	14	0	1	18	5	2	3	7	2	9	6	2	17	2	3	6	0	3	18	9	4	18	0	6	4	4
Crown	...		...	1	11	6	1	16	3	2	1	8	2	8	0	2	15	9	3	7	6	4	3	4	5	3	10	6	10	6
Eagle	1	13	1	1	16	4	2	0	4	2	5	5	2	11	10	3	0	2	3	11	3	4	6	1	5	5	8	6	12	1
Edinburgh	1	8	11	1	12	8	1	16	9	2	1	8	2	7	8	2	15	3	3	4	11	3	19	9	5	0	0	6	4	4
Emperor	1	11	2	1	15	1	1	19	9	2	5	2	2	11	10	3	0	1	3	10	9	4	5	2	5	6	4	6	14	10
Empire	...		...	1	12	10	1	17	6	2	2	11	2	9	1	2	17	2	3	6	5	3	19	8	5	0	0	6	2	8
English and Scot. Law	1	11	6	1	15	8	2	0	8	2	5	11	2	12	8	3	1	4	3	12	4	4	5	7	5	6	10	6	14	7
Equity and Law	1	11	6	1	15	6	2	0	2	2	5	7	2	12	3	3	0	6	3	11	0	4	5	6	5	6	2	6	14	8
European	...		...	1	13	7	1	17	8	2	2	6	2	8	6	2	16	3	3	6	4	3	19	8	4	17	5	6	1	6
General	1	9	1	1	12	0	1	16	3	2	1	5	2	7	8	2	15	7	3	6	0	4	1	1	5	0	8	6	5	3
General Provident	...		...	1	14	5	1	17	0	2	5	6	2	8	2	3	0	10	3	7	9	4	7	0	5	5	0	6	8	0
Great Britain	...		...	1	16	4	2	0	2	2	5	1	2	11	7	3	0	3	3	11	11	4	7	6	5	8	7	6	17	0
Gresham	1	10	7	1	13	10	1	17	11	2	2	11	2	9	4	2	17	7	3	8	9	4	2	5	5	3	0	6	9	5
Guardian	1	9	8	1	13	3	1	17	4	2	2	7	2	9	0	2	17	0	3	6	11	4	0	0	4	16	8	6	0	0
Hand-in-Hand	1	14	5	1	14	5	1	19	6	2	5	6	2	12	4	3	0	9	3	12	0	4	6	11	5	4	11	6	7	4
Hercules	...		...	1	12	5	1	16	8	2	2	0	2	8	6	2	17	4	3	9	0	4	4	5	5	5	0	6	12	7
Imperial	...		...	1	15	9	1	19	8	2	4	7	2	10	9	2	18	8	3	9	3	4	3	5	5	2	1	6	7	3
Imperial Union	...		...	1	13	2	1	17	0	2	1	10	2	8	5	2	16	5	3	6	9	4	1	0	4	19	11	6	4	1

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.	Age 20.	Age 25.	Age 30.	Age 35.	Age 40.	Age 45.	Age 50.	Age 55.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
International	... ...	1 13 7	1 18 6	2 4 4	2 10 11	2 18 8	3 9 4	4 4 2	5 5 6	6 13 6
Kent	... ..	1 15 0	1 19 3	2 4 8	2 11 3	2 19 3	3 10 11	4 5 5	5 4 6	6 11 6
Lancashire	1 11 1	1 13 10	1 17 7	2 2 6	2 8 6	2 16 9	3 7 6	4 2 6	5 0 1	6 2 6
Law Life	... ...	1 15 6	2 0 6	2 6 1	2 12 7	3 0 7	3 11 0	4 4 10	5 1 6	6 2 6
Law Property	1 11 8	1 15 11	2 0 4	2 5 6	2 11 11	3 0 3	3 11 0	4 5 2	5 4 3	6 10 0
Law Union	1 10 6	1 14 7	1 19 0	2 4 5	2 11 2	2 19 5	3 10 5	4 4 11	5 4 9	6 12 6
Legal and General	... ...	1 16 4	2 1 1	2 6 9	2 13 7	3 1 11	3 12 7	4 6 9	5 7 0	6 15 5
Liverp. & Lond. & Globe	1 9 7	1 13 7	1 17 8	2 2 6	2 8 6	2 16 3	3 6 4	3 19 8	4 17 5	6 1 6
Life Ass. of Scotland..	... ...	1 12 8	1 17 3	2 2 10	2 17 0	2 17 5	3 17 2	4 2 3	4 19 11	6 1 11
Life Investment	... ...	1 12 11	1 17 6	2 3 0	2 9 2	2 17 3	3 6 5	3 19 9	5 0 0	6 7 3
London Assurance ...	... ...	1 15 11	2 0 8	2 5 11	2 12 1	3 0 0	3 10 10	4 5 7	5 3 4	5 6 11
London Life	1 9 10	1 13 7	1 17 0	2 1 5	2 7 6	2 15 5	3 6 0	4 1 2	5 1 0	6 5 10
London & Provincial Law	... ...	1 15 9	2 0 4	2 5 7	2 11 9	2 19 3	3 9 2	4 2 4	4 19 1	6 5 6
London and Lancashire .	... ...	1 12 10	1 17 5	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 7 5
London and Manchester.	... ...	1 11 8	1 17 0	2 2 2	2 8 8	2 16 8	3 7 8	4 4 4	5 6 4	6 11 4
London and Northern..	... ...	1 15 2	1 19 5	2 4 10	2 11 8	3 0 3	3 11 4	4 6 7	5 6 3	6 14 8
London and Southwark .	... ...	1 13 9	1 18 4	2 4 0	2 10 3	2 18 6	3 8 0	4 1 10	5 2 10	6 11 3
Manchester Provident..	... ...	1 15 2	1 19 5	2 4 10	2 11 3	3 0 3	3 11 4	4 6 7	5 7 11	6 19 2
Metropolitan..........	1 10 8	1 14 5	1 18 4	2 3 0	2 8 10	2 16 6	3 5 9	3 18 8	4 16 2	6 0 6
Midland Counties .: ..	1 13 1	1 17 4	2 0 7	2 5 9	2 11 11	3 0 5	3 10 9	4 5 3	5 3 8	6 9 8
Mutual	1 10 0	1 14 4	1 19 3	2 4 11	2 11 6	2 19 7	3 10 2	4 4 3	5 1 2	6 2 11
National Life Society ..	1 11 6	1 15 3	1 19 0	2 3 6	2 9 3	2 16 7	3 6 2	3 19 3	4 17 2	6 0 1
National Ass. of Ireland.	1 12 6	1 17 2	2 2 0	2 7 2	2 13 0	3 1 10	3 12 0	4 4 2	5 2 8	6 10 4
National Guardian .. .	... ...	1 12 7	... ...	2 2 8	... ...	2 16 11	... ...	3 19 5	4 19 8	6 6 11
National Union	... ...	1 14 1	1 18 6	2 3 10	2 10 7	2 19 1	3 10 0	4 4 4	5 4 2	6 11 10
Northern	... ...	1 12 7	1 17 1	2 2 7	2 8 8	2 16 8	3 5 9	3 19 0	4 19 1	6 6 3
North British	1 9 8	1 12 11	1 17 6	2 3 0	2 9 2	2 17 8	3 6 5	3 19 9	5 0 0	6 3 1
Norwich Provident	... ...	1 14 10	1 19 4	2 4 10	2 11 9	3 0 5	3 11 7	4 6 4	5 6 8	6 14 10
Patriotic	1 9 2	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 9	5 0 0	6 7 5
Pelican	1 11 0	1 13 10	1 18 2	2 4 0	2 11 0	2 18 10	3 8 7	4 0 9	4 18 10	6 1 0
Planet	... ...	1 16 2	2 0 1	2 5 1	2 11 6	2 19 11	3 11 1	4 6 1	5 6 1	6 13 1
Protector	... ...	1 13 10	1 17 11	2 2 11	2 9 4	2 17 7	3 8 9	4 2 5	5 3 0	6 9 5

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.	Age 20.	Age 25.	Age 30.	Age 35.	Age 40.	Age 45.	Age 50.	Age 55.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Provident	1 10 10	1 14 10	1 18 6	2 2 9	2 8 0	2 14 5	3 2 5	3 17 0	4 10 4	6 7 4
Provident Clerks	1 8 9	1 12 6	1 16 1	2 1 9	2 8 1	2 16 5	3 8 6	4 3 0	5 5 8	7 4 0
Provincial	1 9 8	1 13 3	1 17 4	2 2 7	2 9 0	2 17 0	3 6 1	4 0 0	4 16 8	6 0 0
Provincial Union......	... ...	1 12 4	... ...	2 2 10	... ...	2 17 4	... ...	4 5 0	5 7 0	6 12 0
Queen	1 9 4	1 12 7	1 16 10	2 2 9	2 6 10	2 17 7	3 9 3	4 2 0	5 2 4	6 13 2
Reliance	... ...	1 14 0	1 18 0	2 4 6	2 11 3	2 19 6	3 10 6	4 5 1	5 2 9	6 5 2
Rock	1 14 9	1 17 1	2 0 10	2 5 5	2 10 10	2 17 9	3 6 3	4 1 7	5 1 0	... ...
Royal	... ...	1 13 8	1 18 2	2 3 11	2 10 0	2 18 0	3 7 11	4 1 7	5 1 1	6 6 0
Royal Exchange	1 12 5	1 16 6	2 1 3	2 6 8	2 13 0	3 0 9	3 11 0	4 4 8	5 1 2	6 2 3
Royal Farmers........	1 12 0	1 14 11	1 18 11	2 4 1	2 10 3	2 18 10	3 9 7	4 4 5	5 4 8	6 11 2
Sceptre	... ...	1 13 3	1 18 3	2 3 11	2 9 6	2 17 4	3 6 9	4 2 2	5 0 7	6 10 10
Scottish Amicable	1 9 4	1 14 1	1 17 11	2 2 7	2 8 6	2 16 0	3 5 6	3 19 4	4 18 0	6 1 10
Scottish Friendly......	... ...	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 7 4
Scottish Imperial......	... ...	1 12 7	1 17 1	2 2 7	2 9 0	2 16 8	3 6 3	3 19 0	4 17 4	6 6 0
Scottish National......	... ...	1 12 7	1 17 2	2 2 7	2 8 9	2 16 9	3 5 10	3 19 1	4 19 2	... ...
Scottish Provincial	1 8 6	1 12 3	1 16 11	2 2 6	2 8 10	2 17 1	3 5 10	3 18 6	4 18 2	6 4 6
Scottish Union........	... ...	1 12 11	1 17 0	2 2 4	2 9 1	2 17 2	3 6 4	3 19 8	5 0 0	6 3 4
Scottish Widows' Fund.	... ...	1 12 1	1 16 7	2 2 0	2 8 0	2 15 11	3 4 11	3 17 11	4 17 9	6 4 6
Sheffield and Lincoln ..	... ...	1 15 3	.. ...	2 5 4	.. ...	3 1 1	... ...	4 7 3	4 18 0	6 10 6
Sovereign	... ...	1 13 7	1 17 10	2 3 0	2 9 8	2 18 2	3 9 7	4 4 7	5 4 6	6 11 3
Standard	1 9 2	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 2 8
Star	1 11 8	1 15 1	2 0 1	2 5 10	2 12 6	3 1 0	3 10 3	4 5 2	5 6 10	6 15 10
Sun	1 9 5	1 13 3	1 18 3	2 4 3	2 11 0	2 19 11	3 9 11	4 4 9	5 3 0	6 19 6
Union	.. ...	1 13 10	1 18 5	2 3 0	2 10 10	2 19 6	3 10 1	4 3 10	5 1 1	6 4 2
United Eng. & Scottish.	... ...	1 15 0	1 18 10	2 3 10	2 9 3	2 16 6	3 5 5	3 17 8	4 17 11	6 6 1
United Kent..........	1 11 3	1 15 0	1 19 3	2 4 8	2 11 3	2 19 3	3 10 11	4 5 5	5 4 6	6 11 6
Universal	... ...	1 14 10	1 19 0	2 4 0	2 9 6	2 16 9	3 5 0	3 17 0	4 15 3	5 19 11
West of England......	.. ...	1 15 5	2 0 2	2 5 9	2 12 5	3 0 6	3 10 8	4 3 6	5 0 0	6 1 10
West. Counties & London	... ...	1 14 8	1 19 7	2 5 4	2 11 11	3 0 5	3 10 1	4 4 2	5 5 8	6 14 7
Westminster & General.	1 10 11	1 14 7	1 19 7	2 5 4	2 11 10	3 0 4	3 10 0	4 4 0	5 5 6	6 14 2
Whittington	1 8 0	1 11 8	1 16 6	2 2 2	2 8 6	2 17 0	3 6 8	4 0 10	5 3 0	6 13 2
Yorkshire	... ...	1 14 0	1 18 10	2 4 1	2 10 6	2 18 3	3 7 7	4 0 5	5 0 11	6 7 4

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £ 100 at Death, without participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
International	...		...	1	13	7	1	18	6	2	4	4	2	10	11	2	18	8	3	9	4	4	4	2	5	5	6	6	13	6
Kent	...		..	1	15	0	1	19	3	2	4	8	2	11	3	2	19	3	3	10	11	4	5	5	5	4	6	6	11	6
Lancashire	1	11	1	1	13	10	1	17	7	2	2	6	2	8	6	2	16	9	3	7	6	4	2	6	5	0	1	6	2	6
Law Life	...		...	1	15	6	2	0	6	2	6	1	2	12	7	3	0	7	3	11	0	4	4	10	5	1	6	6	2	6
Law Property	1	11	8	1	15	11	2	0	4	2	5	6	2	11	11	3	0	3	3	11	0	4	5	2	5	4	3	6	10	0
Law Union	1	10	6	1	14	7	1	19	0	2	4	5	2	11	2	2	19	5	3	10	5	4	4	11	5	4	9	6	12	6
Legal and General	...		...	1	16	4	2	1	1	2	6	9	2	13	7	3	1	11	3	12	7	4	6	9	5	7	0	6	15	5
Liverp. & Lond. & Globe	1	9	7	1	13	7	1	17	8	2	2	6	2	8	6	2	16	3	3	6	4	3	19	8	4	17	5	6	1	6
Life Ass. of Scotland	...		...	1	12	8	1	17	3	2	2	10	2	17	0	2	17	5	3	17	2	4	2	3	4	19	11	6	1	11
Life Investment	...		...	1	12	11	1	17	6	2	3	0	2	9	2	2	17	3	3	6	5	3	19	9	5	0	0	6	7	3
London Assurance	...		...	1	15	11	2	0	8	2	5	11	2	12	1	3	0	0	3	10	10	4	5	7	5	3	4	5	6	11
London Life	1	9	10	1	13	7	1	17	0	2	1	5	2	7	6	2	15	5	3	6	0	4	1	2	5	1	0	6	5	10
London & Provincial Law	...		...	1	15	9	2	0	4	2	5	7	2	11	9	2	19	3	3	9	2	4	2	4	4	19	1	6	5	6
London and Lancashire	...		...	1	12	10	1	17	5	2	2	11	2	9	1	2	17	2	3	6	5	3	19	8	5	0	0	6	7	5
London and Manchester	...		...	1	11	8	1	17	0	2	2	2	2	8	8	2	16	8	3	7	8	4	4	4	5	6	4	6	11	4
London and Northern	...		...	1	15	2	1	19	5	2	4	10	2	11	8	3	0	3	3	11	4	4	6	7	5	6	3	6	14	8
London and Southwark	...		...	1	13	9	1	18	4	2	4	0	2	10	3	2	18	6	3	8	0	4	1	10	5	2	10	6	11	3
Manchester Provident	...		...	1	15	2	1	19	5	2	4	10	2	11	8	3	0	3	3	11	4	4	6	7	5	7	11	6	19	2
Metropolitan	1	10	8	1	14	5	1	18	4	2	3	0	2	8	10	2	16	6	3	5	9	3	18	8	4	16	2	6	0	6
Midland Counties	1	13	1	1	17	4	2	0	7	2	5	9	2	11	11	3	0	5	3	10	9	4	5	3	5	3	8	6	9	8
Mutual	1	10	0	1	14	4	1	19	3	2	4	11	2	11	6	2	19	7	3	10	2	4	4	3	5	1	2	6	2	11
National Life Society	1	11	6	1	15	3	1	19	0	2	3	6	2	9	3	2	16	7	3	6	2	3	19	3	4	17	2	6	0	1
National Ass. of Ireland	1	12	6	1	17	2	2	2	0	2	7	2	2	13	0	3	1	10	3	12	0	4	4	2	5	2	8	6	10	4
National Guardian	...		...	1	12	7	...		...	2	2	8	...		...	2	16	11	...		...	3	19	5	4	19	8	6	6	11
National Union	...		...	1	14	1	1	18	6	2	3	10	2	10	7	2	19	1	3	10	0	4	4	4	5	4	2	6	11	10
Northern	...		...	1	12	7	1	17	1	2	2	7	2	8	8	2	16	8	3	5	9	3	19	0	4	19	1	6	6	3
North British	1	9	3	1	12	11	1	17	6	2	3	0	2	9	2	2	17	3	3	6	5	3	19	9	5	0	0	6	3	1
Norwich Provident	...		...	1	14	10	1	19	4	2	4	10	2	11	9	3	0	5	3	11	7	4	6	4	5	6	8	6	14	10
Patriotic	1	9	2	1	12	10	1	17	6	2	2	11	2	9	1	2	17	2	3	6	5	3	19	9	5	0	0	6	7	5
Pelican	1	11	0	1	13	10	1	18	2	2	4	0	2	11	0	2	18	10	3	8	7	4	0	9	4	18	10	6	1	0
Planet	...		...	1	16	2	2	0	1	2	5	1	2	11	6	2	19	11	3	11	1	4	6	1	5	6	1	6	13	1
Protector	...		...	1	13	10	1	17	11	2	2	11	2	9	4	2	17	7	3	8	9	4	2	5	5	3	0	6	9	5

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.	Age 20.	Age 25.	Age 30.	Age 35.	Age 40.	Age 45.	Age 50.	Age 55.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Provident	1 10 10	1 14 10	1 18 6	2 2 9	2 8 0	2 14 5	3 2 5	3 17 0	4 10 4	6 7 4
Provident Clerks	1 8 9	1 12 6	1 16 1	2 1 9	2 8 1	2 16 5	3 8 6	4 3 0	5 5 8	7 4 0
Provincial	1 9 8	1 13 3	1 17 4	2 2 7	2 9 0	2 17 0	3 6 1	4 0 0	4 16 8	6 0 0
Provincial Union......	... ...	1 12 4	... ...	2 2 10	... ...	2 17 4	... ...	4 5 0	5 7 0	6 12 0
Queen	1 9 4	1 12 7	1 16 10	2 2 9	2 6 10	2 17 7	3 9 3	4 2 0	5 2 4	6 13 2
Reliance	... ...	1 14 0	1 18 9	2 4 6	2 11 3	2 19 6	3 10 6	4 5 1	5 2 9	6 5 2
Rock................	1 14 9	1 17 1	2 0 10	2 5 5	2 10 10	2 17 9	3 6 3	4 1 7	5 1 0	... ...
Royal	... ...	1 13 8	1 18 2	2 3 11	2 10 0	2 18 0	3 7 11	4 1 7	5 1 1	6 6 0
Royal Exchange	1 12 5	1 16 6	2 1 3	2 6 8	2 13 0	3 0 9	3 11 0	4 4 8	5 1 2	6 2 3
Royal Farmers........	1 12 0	1 14 11	1 18 11	2 4 1	2 10 8	2 18 10	3 9 7	4 4 5	5 4 8	6 11 2
Sceptre	... ...	1 13 3	1 18 3	2 3 11	2 9 6	2 17 4	3 6 9	4 2 2	5 0 7	6 10 10
Scottish Amicable	1 9 4	1 14 1	1 17 11	2 2 7	2 8 6	2 16 0	3 5 6	3 19 4	4 18 0	6 1 10
Scottish Friendly......	... ...	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 7 4
Scottish Imperial......	... ...	1 12 7	1 17 1	2 2 7	2 9 0	2 16 8	3 6 3	3 19 0	4 17 4	6 6 0
Scottish National......	... ...	1 12 7	1 17 2	2 2 7	2 8 9	2 16 9	3 5 10	3 19 1	4 19 2	... ...
Scottish Provincial	1 8 6	1 12 3	1 16 11	2 2 6	2 8 10	2 17 1	3 5 10	3 18 6	4 18 2	6 4 6
Scottish Union........	... ...	1 12 11	1 17 0	2 2 4	2 9 1	2 17 2	3 6 4	3 19 8	5 0 0	6 3 4
Scottish Widows' Fund.	... ...	1 12 1	1 16 7	2 2 0	2 8 0	2 15 11	3 4 11	3 17 11	4 17 9	6 4 6
Sheffield and Lincoln ..	... ...	1 15 3	.. ...	2 5 4	.. ...	3 1 1	... ...	4 7 3	4 18 0	6 10 6
Sovereign	... ...	1 13 7	1 17 10	2 3 0	2 9 8	2 18 2	3 9 7	4 4 7	5 4 6	6 11 3
Standard	1 9 2	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 2 8
Star	1 11 8	1 15 1	2 0 1	2 5 10	2 12 6	3 1 0	3 10 3	4 5 2	5 6 10	6 15 10
Sun	1 9 5	1 13 3	1 18 3	2 4 3	2 11 0	2 19 11	3 9 11	4 4 9	5 8 0	6 19 6
Union	.. ...	1 13 10	1 18 5	2 3 0	2 10 10	2 19 6	3 10 1	4 3 10	5 1 1	6 4 2
United Eng. & Scottish.	... ...	1 15 0	1 18 10	2 3 10	2 9 3	2 16 6	3 5 5	3 17 8	4 17 11	6 6 1
United Kent..........	1 11 3	1 15 0	1 19 3	2 4 8	2 11 3	2 19 3	3 10 11	4 5 5	5 4 6	6 11 6
Universal	... ...	1 14 10	1 19 0	2 4 0	2 9 6	2 16 9	3 5 0	3 17 0	4 15 3	5 19 11
West of England......	.. ...	1 15 5	2 0 2	2 5 9	2 12 5	3 0 6	3 10 8	4 3 6	5 0 0	6 1 10
West. Counties & London	... ...	1 14 8	1 19 7	2 5 4	2 11 11	3 0 5	3 10 1	4 4 2	5 5 8	6 14 7
Westminster & General	1 10 11	1 14 7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DIVISION IV.

BONUSES: HOW DERIVED, AND THE PROPER TIMES AND MANNER OF DECLARING THEM.

> "It is a singular fact, that, on a matter apparently so simple as the profits of a Life Assurance Society, and also so important as to be constantly before the minds of men of business, the most opposite ideas are entertained and acted on. Sums of money, amounting to millions of pounds, are actually distributed not according to what is just and equitable, but according to some mere opinion founded on some scheme for obviating an error by the commission of another. The crudest of these ideas, and that one which I must first discuss is this—that the profit on any policy is the excess of the premiums paid over the sum assured; and the most absurd of its corollaries, that, therefore, no member who has not paid up, in premiums and interest, the full sum assured upon his life, can be entitled to share in profits to which he has contributed nothing."—*Essay on Life Assurance.*

THE subject of bonuses is of such peculiar importance in connection with the understanding of the entire principles and working of Assurance Offices, that we have thought it desirable to devote a special division of this work to its consideration and discussion. It is one also in which the assuring public takes considerable interest.

The term "bonus" signifies, according to the lexicographers, a premium, *a benefit, or an advantage*, and therefore has no direct or peculiar reference to Life Assurance except by association of ideas: although in this respect, we must admit, it is highly significant. Nor is the term "profits" much more correct; for, as we shall see, bonuses are only in part made up of profits. The correct mode of expressing what is generally implied by bonus is "participation in surplus." Bonuses are, in fact derived, or ought to be, out of the surplus funds of Assurance Offices.

So far preliminary, and we fear pedantic; but the importance of the distinction will fully appear as we proceed.

The question of bonuses will re-open nearly all the points of practice we have already discussed. It brings us at once to the subject of premiums: because the "loadings" or additions made to the "net" premiums not only constitute the chief source of the surplus, but give the policy-holders the right of participating therein. It opens up the subject of interest and investments: because if a greater rate of interest be realized than that provided for, or anticipated, in the tables, this source of profit goes to increase the surplus fund of the Society. It brings us to the consideration of *selection:* because any profit which may result from this source must be to the manifest advantage of the funds of the Society. And it has a very direct bearing upon the *expences of management:* because all money so expended is drawn from what would otherwise constitute a portion of the surplus funds. Hence, if we appear to approach the subject with some care, and even formality, we shall be able to justify ourselves in so doing. That we have not unnecessarily multiplied these considerations the reader will presently have abundant proof.

All who have thought much upon the subject will agree with the editor of Harvey Tuckett's Monthly (American) Insurance Journal, "That there is no subject of greater importance to the whole body of insurers than a just estimate of the actual dividend-giving (bonus) power possessed by Life Insurance Companies. If once," he adds, "the public have ascertained and are convinced of the actual limit of this power, all promises of erroneous benefits to be bestowed will evaporate before the good sense of the community."

It is certain that there are few points in connexion with Life Assurance upon which more erroneous notions prevail than upon the entire subject of bonuses: and yet we venture to think there is no part of the subject capable of being rendered more simple. It is at least a very generally prevailing, if not a popularly accepted, notion that Life Offices *must* realise large profits; and the bonuses of the *Equitable* Office are mostly pointed to as confirmatory of the notion. We will not stop to dwell on the bitter disappointment which is in store for many of the victims of this delusion, but will at once grapple with the practical part of the subject. With respect to the bonuses of the *Equitable* let us once for all say they arose from a combination of circumstances which can never occur again. These circumstances have indeed already been passed in review;—we will, therefore, only now epitomise them. The high rates of premium have been abolished in favor of a more Equitable scale. Money can no longer be invested in the funds in a manner to yield a return of nearly cent. per cent. on the principal. The policies now issued are not, as formerly, for short periods leaving a considerable profit to the Office, but are mostly whole life policies, for which some consideration is expected if surrendered to the Office. Assurers also *now* expect, and are generally guaranteed, participation in the surplus at some early date after the formation of the Society, and do not wait, as formerly, until an unmistakably large fund has accumulated. The *Equitable* did not make any division of its surplus for the first twenty years. So that, in fact, the circumstances which led to the great accumulations of the *Equitable* have entirely changed. The methods of distributing the surplus have also been changed, and, in many instances, improved. Formerly as it has been sagaciously observed, D. E. and F. received two or three times the sum to which they were entitled, simply because A. B. and C., "who die during the days of a caution, which has since been shown to be unnecessary," did *not* get their share of the then existing surplus!

That we may properly proceed with this investigation it is desirable to divide it into several chapters, corresponding to the several divisions of the subject.

CHAPTER I.

SOURCES OF SURPLUS IN AN ASSURANCE OFFICE.

In order to be in a position to judge of the principles upon which an equitable division of surplus should be made, it is apparent that the reader should be thoroughly familiar with the sources of such surplus: failing this, it would be as impossible to understand the subject as to steer a ship without understanding the workings of the compass. We therefore purpose to follow out these points minutely. In tracing out the several sources of profit we are simply complying with the requirements of a well-known maxim, which (if the levity may be pardoned) runs thus: "first catch your hare, and then cook him." But in all matters of bonus calculation the "cooking" should be strictly guarded against, not to say constituted a penal offence! In the absence of correct notions as to where the profits come from, we may expect very crude and unsatisfactory notions how they should be disposed of.

While we shall have occasion to show that the principal sources of profit are pretty well agreed upon by Actuaries, we shall also have occasion to notice that the *relative value* of these several sources is the subject of very considerable differences of opinion. After a careful consideration of the whole question, and some personal experience, we have adopted the following classification:—1. *The* LOADING *of the premiums.* 2. *The rate of* INTEREST *realised on Investments over and above the rate assumed in the Tables of Premiums.* 3. *The profits on non-participating and Term Policies.* 4. *The profits derived from* LAPSED AND SURRENDERED POLICIES. 5. *The advantages arising from* SELECTION *of lives.* And, negatively only, may be added to these *Economy of management.*

Before proceeding to support the above arrangement it appears desirable to glance at the classification adopted by several able writers.

Dr. Farr, in his paper explanatory of the English Life Table No. 2, omitting the chief source, viz. the "loading," which he speaks of as arbitrary, says:—

> "The sources of profit in an Insurance Office are—(1.) *The careful selection of Lives.* The payments on deaths in the first year or years may be considerably reduced by a skilful selection. The saving is legitimate profit. A strict exclusion, however, of all but the best lives necessarily diminishes the amount of business. (2.) *The investment of its funds securely at a high rate of interest* is another source of profit. Thus, if a stock of £1,566,644, which at 3 per cent interest will meet the requirements of the Life Table, can be invested, as it has hitherto been by many Offices at 4 per cent. interest, the profits from this source will be £15,666 in the year. (3.) The gains on Insurances on the *non-participating* terms, or on the *lapse of policies* also swell the profits. The price which the Office pays leaves it a considerable profit. If the life hold on in a

Mutual Office it participates in the surplus. (4.) The profits on all investments is reducible to *Interest;* but it may be worth considering the case separately if such investments in the funds as were made by the *Equitable* and other Offices when £100 stock was required for £50, £60, £70, or £80 money, and will sell for £90 or £100 money, according to the state of the market. . . . . . . The profits from these sources alone cover all the expences in some Offices, and leave a surplus."*

Mr. Jellicoe, Actuary of the *Eagle* Assurance Office confirms this view in other words, but places the loading first on the list. He says:—

> "The conditions on which the amount of bonus depends are—(1.) The rates of premium charged; (2.) The rates of *mortality* and *interest* which actually prevail; (3.) The time elapsed from the completion of the assurance; and (4.) The proportion which the yearly expenditure bears to the amount of business annually transacted." And he adds, "there are, no doubt, others of an accidental description; such, for instance, as the abandonment of assurance policies by their owners; but although this was a matter of frequent occurrence formerly, it is no longer so at the present day; and it is very important to bear in mind, that it is only *the* [*surrender*] *value of the policy* which in such cases falls into the general fund, and not the amount of premiums paid in respect of it, as the statements frequently put forth would seem to imply."

Another writer, to illustrate the advantages arising from a favourable rate of mortality, says:—

> "A young man will pay considerably less than an old man, because the Society will expect to receive a greater number of premiums from him before they will be called upon to pay his family the amount of his policy: for a similar reason, if the general average of life prove to be longer than was originally anticipated, the assurers, as a body, ought to pay considerably less than they otherwise would have paid had longevity been less favourable to the Society. And this surplus or difference, whatever it may be, between what is and what ought to be paid, constitutes what is called profit, out of which a *bonus* is declared."†

Mr. Ingall speaks of *interest* as one source of profit, "and perhaps," he says, "it may be considered the principal one." "But," he adds, "I consider there are other sources which, in the long run, would be quite equal to the profits arising from the difference in the rate of interest." "One is a careful selection of lives; another is that when the policy is surrendered the Office does not give the whole amount, which it would reserve as a matter of security, and the proportion returned varies very much in different Offices; perhaps it would vary between 20 and 30 per cent. on the amount of the premium paid."

With some of the earlier Offices the profits from surrender, or rather from forfeited policies, was no doubt very considerable: for instance, Mr. Morgan, in his address to the Court of the *Equitable*, in 1795, says, "I do not believe *one half* of the assurances which were made during the first 25 years, for the whole of life have been either continued till they became claims, *or even surrendered for a valuable consideration.*" In another part of the same address, he speaks of these as forming "*a very large proportion of the profits of the Society.*" Circumstances, however, have since very much changed.

Some of the early Offices also, as the *Amicable*, the *Equitable*, *London Life*, the *Rock*, and still later the *Scottish Equitable*, charged entrance fees, and up till very recently the policy stamps and medical fees were paid by the assured. They are now, we believe, almost invariably paid by the Offices. Here then not only is one source of profit cut off, but several items of expenditure added.

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* Vide Letter in Twelfth Report of Registrar-General.

† Life Assurance—its schemes, &c.

Returning to the authorities, Mr. Samuel Brown, Actuary of the *Guardian* Office, limits the sources of profit :—

> "In any Life Assurance Company there are but two sources from which profit can be derived; first, that the premiums have been improved at a higher rate of interest than that which formed the basis for their original calculation; and, secondly, that the number of deaths in the Society has been actually less than was estimated by the table of mortality from which the premiums were formed." "Profits," he continues, "under whatever head they may be concealed, must spring from one or other of these variations from the original assumption. As all the Offices have had the benefit of the experience of those Companies, which, at an early period undertook what then appeared the great risk of an untried enterprize, none would have been justified in starting with insufficient premiums; and, consequently, all have been presumed to obtain a considerable amount of profits, even from their earliest establishment, unless, indeed, the amalgamations which are occasionally used for puffing in the public papers, disguise a disagreeable truth under the profession of advantage to the assured."

He properly remarks on the subject of investing the funds of an Office at high rates of interest that, "as a general rule, where greater gain can be acquired than is to be secured in the public funds, it must be with increased risk of loss." Most of the Offices have been very fortunate in this particular, although a few exceptions could be named.

Mr. Sturrock goes more deeply into the question :—

> "In considering the effects of the large profits resulting from the business of Life Assurance, there is," he says, "no point about which so much general misconception prevails as that of bonuses. The experience of nearly a century has proved that these must, in all cases, exist where certain rates of premium are exacted. *Bonuses are generally termed profits; but they are not so in the true meaning of the term.* If a merchant engages in a speculation, he does so because in the exercise of a cautious judgment, he believes he is safe; but he has no proper means of knowing how great the profit or loss may be. In such business, the term profit is properly used, as applicable to uncertain events. The case is quite different with regard to a number of Life Assurance transactions. These are entered into after premiums have been fixed by men of science on known and accurate data, for the express purpose of avoiding any chance of loss over the mass of risks undertaken. Bonuses are, therefore, *the necessary consequence of Offices charging premiums higher than their obligations require;* and they do not arise from the fortunate issue of any speculative enterprize."

Mr. Sturrock, of course, only refers to Offices which are under sound and economic management ; and he continues, "unless this additional premium were given away to proprietors, the Office could not avoid giving bonuses, as the *only means* of returning the surplus premiums paid by the assured."

With respect to the *loading*, it is a perpetual, and to each particular Society, a uniform source of profit so long as the premium income remains, and constantly increasing with it :—it is the real *bonus-giving power* ; and, as such, is viewed and spoken of by the majority of actuaries. Mr. Jellicoe refers to it as "the provision for future *surplus* and expenses;" Mr. Pinckard, as "profits in anticipation ;" Mr. Jenkin Jones, as "marginal guarantee;" Mr. W. T. Thomson, as "reserve guarantee ;" Mr. Reddish, as "the loading intended to provide for expenses and *profit ;*" and so on throughout the list. In fact there can be no two opinions as to the real effect of the "charge" on the premiums, over and above the portion expended for expenses of management.

MIXED OFFICES.

Table of Rates of all the present Mixed Offices, at the following ages, to secure £100 payable at Death, with participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Imperial Union	...	...	...	1	18	9	...	...	...	2	8	5	...	...	...	3	4	6	...	...	...	4	11	9	5	11	5	6	19	11
Insurance Co. of Scot	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
International	1	12	10	1	17	4	2	2	9	2	9	3	2	16	6	3	5	3	3	17	0	4	13	6	5	17	2	7	8	4
Lancashire	1	14	6	1	17	0	2	1	0	2	6	0	2	12	3	3	0	6	3	11	9	4	6	9	5	4	4	6	7	6
Law Life	1	18	7	2	3	7	2	8	1	2	13	5	2	19	10	3	7	11	3	17	11	4	10	8	5	6	4	6	7	4
Law Union	...	...	...	1	18	8	2	3	7	2	9	4	2	16	7	3	5	3	3	17	0	4	12	0	5	12	8	7	1	5
Law Property & Trust	1	14	5	1	19	0	2	3	10	2	9	5	2	16	5	3	5	6	3	17	2	4	12	7	5	13	4	7	1	3
Legal and General	...	...	...	2	0	4	2	5	1	2	10	9	2	17	7	3	5	11	3	16	7	4	10	9	5	11	0	6	19	5
Life Assoc. of Scotland	...	...	...	1	18	6	2	3	10	2	10	0	2	17	0	3	5	2	3	17	2	4	13	4	5	13	4	6	18	2
Life Investment	...	...	...	1	17	5	2	2	7	2	8	10	2	15	10	3	5	0	3	14	0	4	7	0	5	9	1	6	19	0
Liverpool and London	...	...	...	1	19	0	2	3	10	2	9	5	2	16	5	3	5	5	3	17	3	4	12	7	5	13	4	7	1	3
London Assurance	...	...	...	2	0	2	2	5	0	2	10	8	2	17	0	3	5	1	3	15	10	4	10	7	5	8	11	6	12	5
London and Lancashire	...	...	...	1	15	10	2	0	10	2	6	10	2	13	6	3	2	4	3	12	5	4	6	10	5	9	1	6	18	11
London and Northern.	...	...	...	1	19	8	...	...	...	2	9	9	...	...	...	3	6	0	...	...	...	4	13	9	5	15	5	7	4	2
London and Southwark	...	...	...	1	18	0	2	3	0	2	9	4	2	16	5	3	5	8	3	16	3	4	12	2	5	15	10	7	7	9
London and Prov. Law	...	...	...	2	1	0	2	5	4	2	10	7	2	17	4	3	5	9	3	16	5	4	10	6	5	9	5	6	16	4
Midland Counties	1	17	3	2	1	6	2	4	10	2	9	11	2	16	2	3	4	8	3	15	0	4	9	6	5	7	11	6	13	10
Nat. Assoc. of Ireland	...	...	...	1	19	4	2	4	3	2	10	2	2	17	5	3	6	3	3	17	4	4	11	1	5	10	4	6	16	0
National Guardian	...	...	...	1	17	1	...	...	...	2	8	6	...	...	...	3	4	8	...	...	...	4	6	8	5	8	9	6	18	8
National Union	...	...	...	1	18	1	2	2	11	2	8	11	2	16	5	3	5	11	3	18	2	4	14	2	5	16	4	7	7	2
North British	...	...	...	1	18	2	2	3	5	2	9	10	2	17	0	3	6	1	3	16	7	4	11	11	5	11	2	6	16	2
Northern	...	...	...	1	16	9	2	1	11	2	8	0	2	14	11	3	3	11	3	14	3	4	7	4	5	7	3	6	16	8
Nottingham and Derby	1	10	11	1	15	5	2	0	6	2	6	2	2	12	11	3	0	11	3	11	7	4	5	2	5	1	6	6	1	6
Patriotic (Irish)	1	13	2	1	17	4	2	2	7	2	8	9	2	15	10	3	5	0	3	15	4	4	8	11	5	9	1	6	18	11
Pelican	1	15	0	1	19	3	2	4	4	2	10	4	2	17	7	3	6	5	3	17	4	4	10	7	5	6	4	6	7	4
Planet	...	...	...	1	18	4	...	...	...	2	8	5	...	...	...	3	4	5	...	...	...	4	12	11	5	14	7	7	3	11
Provident	...	...	...	1	19	4	2	4	3	2	10	2	2	17	5	3	6	3	3	17	4	4	11	1	5	8	8	6	11	10
Provincial Union	...	...	...	1	18	6	2	5	4	2	10	8	2	17	0	3	6	4	3	14	11	4	16	0	5	17	8	7	4	0
Provincial (Welsh)	1	16	2	2	1	0	2	5	4	2	10	7	2	17	0	3	5	0	3	14	11	4	8	0	5	4	8	6	7	2
Queen	1	12	0	1	15	8	2	0	4	2	6	1	2	13	6	3	3	0	3	14	9	4	9	6	5	10	6	6	17	9

MIXED OFFICES.

Table of Rates of all the present Mixed Offices, at the following ages, to secure £100 payable at Death, with participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Rock	1	18	7	2	3	7	2	8	1	2	13	5	2	19	10	3	7	11	3	17	11	4	10	8	5	6	4	6	7	4
Royal	...	...	...	1	19	4	2	4	2	2	9	9	2	16	2	3	4	1	3	14	6	4	8	3	5	10	4	6	18	7
Royal Exchange	1	16	8	2	0	11	2	5	11	2	11	7	2	18	2	3	6	3	3	17	0	4	11	3	5	8	6	6	10	7
Royal Farmers	1	13	4	1	16	10	2	1	2	2	7	5	2	14	6	3	3	4	3	15	0	4	10	7	5	10	2	6	18	7
Sceptre	...	...	...	1	17	6	2	2	4	2	8	8	2	15	8	3	4	8	3	15	4	4	10	6	5	13	4	7	4	6
Scottish National	...	...	...	1	17	6	2	2	8	2	9	0	2	6	10	3	4	6	3	14	0	4	8	6	5	9	6	...	...	...
Scottish Provincial	1	12	3	1	16	5	2	1	8	2	8	1	2	15	2	3	4	6	3	13	9	4	7	3	5	8	1	6	15	10
Scottish Union	1	12	11	1	18	5	2	4	3	2	9	11	2	16	9	3	5	0	3	15	1	4	7	9	5	9	3	6	15	9
Sovereign	...	...	...	1	19	4	2	3	10	2	9	4	2	16	3	3	5	2	3	16	10	4	12	2	5	12	5	6	19	6
Standard	1	16	0	2	1	1	2	5	4	2	10	7	2	16	11	3	4	11	3	14	9	4	8	6	5	6	11	6	11	6
Star	1	13	2	1	17	4	2	2	7	2	8	9	2	15	11	3	4	11	3	15	5	4	10	6	5	13	7	7	4	9
Sun	1	12	8	1	16	11	2	2	6	2	9	2	2	16	8	3	6	6	3	17	8	4	14	2	5	19	11	7	14	11
Union	...	...	...	2	1	5	2	5	8	2	10	8	2	16	10	3	4	7	3	16	0	4	8	4	5	6	4	6	15	0
United Counties	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
United Kent	1	16	6	2	0	0	2	4	3	2	9	8	2	16	3	3	4	3	3	15	11	4	10	5	5	9	6	6	16	7
Universal	1	15	0	1	18	8	2	3	3	2	8	10	2	14	11	3	3	0	3	12	2	4	5	6	5	5	10	6	13	2
University	1	16	8	2	1	5	2	5	9	2	10	9	2	16	11	3	4	7	3	14	1	4	7	6	5	5	4	6	7	4
West of England	1	15	11	2	0	11	2	5	8	2	11	3	2	17	11	3	6	1	3	16	2	4	9	1	5	5	6	6	7	4
Westminster & General	1	13	3	1	17	4	2	2	7	2	8	10	2	15	10	3	5	0	3	15	5	4	10	6	5	13	8	7	4	8
Whittington	1	11	6	1	15	6	2	1	0	2	7	4	2	14	8	3	4	2	3	15	0	4	10	8	5	12	0	6	19	6
Yorkshire	...	...	...	1	18	6	2	3	7	2	9	7	2	16	3	3	5	0	3	14	10	4	9	1	5	10	10	7	0	0

*PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.			Age 20.			Age 25.			Age 30.			Age 35.			Age 40.			Age 45.			Age 50.			Age 55.			Age 60.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Albert	...		...	1	15	2	1	18	3	2	4	10	2	11	0	3	0	3	3	9	11	4	6	7	5	6	3	6	14	8
Albion	...		...	1	13	5	1	18	1	2	3	7	2	9	11	2	18	0	3	7	5	4	0	10	5	1	6	6	9	3
Alliance	1	9	5	1	13	3	1	18	3	2	4	3	2	11	0	2	19	11	3	9	11	4	4	9	5	8	0	6	19	6
Argus	1	8	3	1	11	10	1	15	10	2	0	7	2	6	8	2	14	10	3	5	11	4	0	11	4	19	3	6	0	10
Atlas	1	11	8	1	15	5	1	19	10	2	5	2	2	11	8	2	19	7	3	9	7	4	2	0	4	17	10	...		...
Birmingham Alliance	...		...	1	14	2	1	19	2	2	3	9	2	11	5	2	17	6	3	9	5	4	0	10	5	0	5	6	7	11
British Empire Mutual	...		...	1	13	0	1	17	2	2	2	6	2	8	6	2	16	3	3	6	4	3	19	7	4	17	5	6	2	6
British Equitable	1	11	0	1	15	3	1	19	9	2	5	4	2	12	4	3	1	1	3	12	4	4	7	3	5	7	9	6	16	3
British Prudential	...		...	1	14	10	1	18	11	2	4	0	2	9	6	2	16	9	3	5	0	4	1	4	5	1	9	6	12	8
Briton	...		...	1	13	9	1	18	7	2	4	1	2	10	8	2	19	0	3	8	7	4	3	4	5	4	11	6	12	9
Caledonian	1	8	11	1	12	6	1	17	1	2	1	7	2	6	10	2	14	6	3	5	9	3	19	9	5	0	0	6	3	1
Church of England	...		...	1	13	11	1	17	9	2	2	7	2	9	1	2	17	8	3	9	4	4	4	11	5	5	10	6	14	2
City of Glasgow	1	9	2	1	12	11	1	17	6	2	3	0	2	9	1	2	17	2	3	6	5	3	19	8	5	0	0	6	2	8
Clerical and Medical	...		...	1	13	6	1	18	3	2	4	0	2	10	3	2	18	6	3	8	0	4	1	6	5	2	3	6	10	3
Commercial Union	...		...	1	14	0	1	18	5	2	3	7	2	9	6	2	17	2	3	6	0	3	18	9	4	18	0	6	4	4
Crown	...		...	1	11	6	1	16	3	2	1	8	2	8	0	2	15	9	3	7	6	4	3	4	5	3	10	6	10	6
Eagle	1	13	1	1	16	4	2	0	4	2	5	5	2	11	10	3	0	2	3	11	3	4	6	1	5	5	8	6	12	1
Edinburgh	1	8	11	1	12	8	1	16	9	2	1	8	2	7	8	2	15	3	3	4	11	3	19	9	5	0	0	6	4	4
Emperor	1	11	2	1	15	1	1	19	9	2	5	2	2	11	10	3	0	1	3	10	9	4	5	2	5	6	4	6	14	10
Empire	...		...	1	12	10	1	17	6	2	2	11	2	9	1	2	17	2	3	6	5	3	19	8	5	0	0	6	2	8
English and Scot. Law	1	11	6	1	15	8	2	0	8	2	5	11	2	12	8	3	1	4	3	12	4	4	5	7	5	6	10	6	14	7
Equity and Law	1	11	6	1	15	6	2	0	2	2	5	7	2	12	3	3	0	6	3	11	0	4	5	6	5	6	2	6	14	8
European	...		...	1	13	7	1	17	8	2	2	6	2	8	6	2	16	3	3	6	4	3	19	8	4	17	5	6	1	6
General	1	9	1	1	12	0	1	16	3	2	1	5	2	7	8	2	15	7	3	6	0	4	1	1	5	0	8	6	5	3
General Provident	...		...	1	14	5	1	17	0	2	5	6	2	8	2	3	0	10	3	7	9	4	7	0	5	5	0	6	8	0
Great Britain	...		...	1	16	4	2	0	2	2	5	1	2	11	7	3	0	3	3	11	11	4	7	6	5	8	7	6	17	0
Gresham	1	10	7	1	13	10	1	17	11	2	2	11	2	9	4	2	17	7	3	8	9	4	2	5	5	3	0	6	9	5
Guardian	1	9	8	1	13	3	1	17	4	2	2	7	2	9	0	2	17	0	3	6	11	4	0	0	4	16	8	6	0	0
Hand-in-Hand	1	14	5	1	14	5	1	19	6	2	5	6	2	12	4	3	0	9	3	12	0	4	6	11	5	4	11	6	7	4
Hercules	...		...	1	12	5	1	16	8	2	2	0	2	8	6	2	17	4	3	9	0	4	4	5	5	5	0	6	12	7
Imperial	...		...	1	15	9	1	19	8	2	4	7	2	10	9	2	18	8	3	9	3	4	3	5	5	2	1	6	7	3
Imperial Union	...		...	1	13	2	1	17	0	2	1	10	2	8	5	2	16	5	3	6	9	4	1	0	4	19	11	6	4	1

PROPRIETARY BRANCHES OF MIXED AND MUTUAL OFFICES.

Table of Rates of the Annual Premiums to Assure £100 at Death, without participation in profits.

	Age 15.	Age 20.	Age 25.	Age 30.	Age 35.	Age 40.	Age 45.	Age 50.	Age 55.	Age 60.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
International	... ...	1 13 7	1 18 6	2 4 4	2 10 11	2 18 8	3 9 4	4 4 2	5 5 6	6 13 6
Kent	... ..	1 15 0	1 19 3	2 4 8	2 11 3	2 19 3	3 10 11	4 5 5	5 4 6	6 11 6
Lancashire	1 11 1	1 13 10	1 17 7	2 2 6	2 8 6	2 16 9	3 7 6	4 2 6	5 0 1	6 2 6
Law Life	... ...	1 15 6	2 0 6	2 6 1	2 12 7	3 0 7	3 11 0	4 4 10	5 1 6	6 2 6
Law Property	1 11 8	1 15 11	2 0 4	2 5 6	2 11 11	3 0 3	3 11 0	4 5 2	5 4 3	6 10 0
Law Union	1 10 6	1 14 7	1 19 0	2 4 5	2 11 2	2 19 5	3 10 5	4 4 11	5 4 9	6 12 6
Legal and General	... ...	1 16 4	2 1 1	2 6 9	2 13 7	3 1 11	3 12 7	4 6 9	5 7 0	6 15 5
Liverp. & Lond. & Globe	1 9 7	1 13 7	1 17 8	2 2 6	2 8 6	2 16 3	3 6 4	3 19 8	4 17 5	6 1 6
Life Ass. of Scotland..	... ...	1 12 8	1 17 3	2 2 10	2 17 0	2 17 5	3 17 2	4 2 3	4 19 11	6 1 11
Life Investment	... ...	1 12 11	1 17 6	2 3 0	2 9 2	2 17 3	3 6 5	3 19 9	5 0 0	6 7 3
London Assurance ...	... ...	1 15 11	2 0 8	2 5 11	2 12 1	3 0 0	3 10 10	4 5 7	5 3 4	5 6 11
London Life	1 9 10	1 13 7	1 17 0	2 1 5	2 7 6	2 15 5	3 6 0	4 1 2	5 1 0	6 5 10
London & Provincial Law	... ...	1 15 9	2 0 4	2 5 7	2 11 9	2 19 3	3 9 2	4 2 4	4 19 1	6 5 6
London and Lancashire.	... ...	1 12 10	1 17 5	2 2 11	2 9 1	2 17 2	3 6 5	3 19 8	5 0 0	6 7 5
London and Manchester.	... ...	1 11 8	1 17 0	2 2 2	2 8 8	2 16 8	3 7 8	4 4 4	5 6 4	6 11 4
London and Northern..	... ...	1 15 2	1 19 5	2 4 10	2 11 8	3 0 3	3 11 4	4 6 7	5 6 3	6 14 8
London and Southwark.	... ...	1 13 9	1 18 4	2 4 0	2 10 3	2 18 6	3 8 0	4 1 10	5 2 10	6 11 3
Manchester Provident..	... ...	1 15 2	1 19 5	2 4 10	2 11 8	3 0 3	3 11 4	4 6 7	5 7 11	6 19 2
Metropolitan..........	1 10 8	1 14 5	1 18 4	2 3 0	2 8 10	2 16 6	3 5 9	3 18 8	4 16 2	6 0 6
Midland Counties	1 13 1	1 17 4	2 0 7	2 5 9	2 11 11	3 0 5	3 10 9	4 5 3	5 3 8	6 9 8
Mutual	1 10 0	1 14 4	1 19 3	2 4 11	2 11 6	2 19 7	3 10 2	4 4 3	5 1 2	6 2 11
National Life Society ..	1 11 6	1 15 3	1 19 0	2 3 6	2 9 3	2 16 7	3 6 2	3 19 3	4 17 2	6 0 1
National Ass. of Ireland.	1 12 6	1 17 2	2 2 0	2 7 2	2 13 0	3 1 10	3 12 0	4 4 2	5 2 8	6 10 4
National Guardian .. .	... ...	1 12 7	... ...	2 2 8	... ...	2 16 11	... ...	3 19 5	4 19 8	6 6 11
National Union	... ...	1 14 1	1 18 6	2 3 10	2 10 7	2 19 1	3 10 0	4 4 4	5 4 2	6 11 10
Northern	... ...	1 12 7	1 17 1	2 2 7	2 8 8	2 16 8	3 5 9	3 19 0	4 19 1	6 6 3
North British	1 9 3	1 12 11	1 17 6	2 3 0	2 9 2	2 17 3	3 6 5	3 19 9	5 0 0	6 3 1
Norwich Provident	... ...	1 14 10	1 19 4	2 4 10	2 11 9	3 0 5	3 11 7	4 6 4	5 6 8	6 14 10
Patriotic	1 9 2	1 12 10	1 17 6	2 2 11	2 9 1	2 17 2	3 6 5	3 19 9	5 0 0	6 7 5
Pelican	1 11 0	1 13 10	1 18 2	2 4 0	2 11 0	2 18 10	3 8 7	4 0 9	4 18 10	6 1 0
Planet	... ...	1 16 2	2 0 1	2 5 1	2 11 6	2 19 11	3 11 1	4 6 1	5 6 1	6 13 1
Protector	... ...	1 13 10	1 17 11	2 2 11	2 9 4	2 17 7	3 8 9	4 2 5	5 3 0	6 9 5

never be accurately predicted, in its special operations, within the limits of a comparatively small body of assurers. Interest may be assumed, on an average, based on the experience of the *past*, but can never be assigned, with arithmetical precision, in tables constructed as a guide for future operations. It is absolutely necessary, therefore that both the rate of mortality and the rate of interest shall be assumed. The charges of management, and the chances of loss, have also to be taken into account upon a probable estimate. *The business of Life Assurance must*, therefore, in all cases, be conducted upon a hypothesis. Common sense, and ordinary prudence, at once dictate that the hypothesis shall be a safe one, and such as to cover all the fluctuations and uncertainties arising from the several elements of mortality, interest, expense, and loss, which enter into and affect the actual business result. He adds:—

> "Premiums for assurance are, therefore, charged, and prices for annuities are taken *in all cases somewhat higher, and, in some cases, considerably higher, than the net sums required in the first calculation. In consequence of this excess of charge, a surplus fund arises, which is called profit.*"

The writer then anticipates, to some extent, our remarks upon the division of surplus; but, as his views are impartial, and his manner instructive, we prefer to complete the quotation here:—

> "If this account of the origin and nature of profits be carefully kept in view, it should serve to correct several crude and false notions which are apt to prevail on the subject. It shows at once that the surplus fund has properly been contributed *by all the members, in proportion to the amount of their payments*. and therefore ought, as far as practicable, to be divided among all in a like proportion: that profit is not, and cannot be, the excess of the premiums paid over the sum assured; and that to give the whole of such profit to those who have so paid up, is not to equalize life among the contributors, *but to confer a bounty on long life*, and in as far as the surplus fund is concerned, to act on a principle the very opposite of that on which Life Assurance is founded.
>
> "If our readers experience any difficulty in understanding or assenting to what we are now laying down, we only ask them to exercise a little reflection on the subject. What is the special object of Life Assurance? What is that for which it, and it alone, provides? Not the accumulation of savings only—that may be secured by depositing in a bank, as well as by paying premiums to an Assurance Office [?] Manifestly and confessedly that which is peculiar to assurance is that it provides against premature death, and is intended to equalise life among all contributors. In the very nature of the case some must pay more than they ever receive back, that others may receive back more than they pay. Let the fundamental fact be borne in mind, and it will at once be seen that what is called profit does not arise because *some* members pay more than they receive, but because *all the members* from the beginning have contributed on a scale higher than proved to be necessary. To talk of the members who die early causing a loss, and to punish them by exclusion from all share in the surplus fund, is *not only unjust, but absurd.* The death of one who dies the day after he effects his policy, is no more a loss to the Institution, in the true sense of loss as used in an Association for assuring lives, than that of the man who has paid his premiums for half a century. *Is it not the very pride and glory* of the system that the one case is provided for as fully and ungrudgingly as the other? Even in the case of a party who dies after paying only one premium, is it not clear that he would have paid *less* than he actually did if the rates had been fixed with absolute accuracy according to the risk? Even he, in the single payment he had made must have supplied a practical contribution to the surplus fund. Loss does not arise because members die early, that having been contemplated from the first, and provided for in the calculation. *Loss, in the true sense, would arise if the mortality was greater than was assumed, or if the interest realised was less, or if an investment should be lost, or if expenses of management proved excessive.* In short, loss would appear if the rates were fixed on a scale insufficient to cover all contingencies. It follows, on the other hand, that profit arises because the rates have been fixed on a scale more than sufficient to cover all contingencies."

All the most important points in connection with this part of the question are now fully before the reader; who should at once be prepared to accompany us to the succeeding chapters

CHAPTER II.

OBJECTS AND MODE OF ASCERTAINING THE SURPLUS.

The objects of periodic valuations, of the property and funds of an Assurance Office, are primarily to ascertain its solvency or otherwise; and, secondarily, with a view to the distribution of any surplus which may be found to exist, in accordance with the constitution of the Company and the conditions of the policy. It is in this latter sense that we have chiefly to consider the subject.

The reasons why such valuations are necessary, as distinguished from their objects, arise out of the peculiar nature of assurance contracts, and the lengthened period over which they generally extend. Dr. Farr has indeed told us that "The commercial balance-sheet, in the most correct form, fails to present a correct view of the condition of a Life Office transacting ordinary business; as *its* liabilities are distant, *contingent*, and every year vary in value"—hence a special mode of treatment has been devised which it is our present purpose to explain. The doctrine of Mr. Neison is to the same effect:—"No balance-sheet that I am capable of comprehending would be available for the purpose of shewing the actual condition of an Office in the same manner, as such a thing would be in the case of a banking house." Mr. Finlaison, however, brings us closer to the point, for he declares that "From the largest Office in England to the smallest benefit club there is *no certainty whatever in relying upon any Tables without periodic investigations.*"

The term "surplus" must here be understood in its general sense, and not with reference to the proposition mooted in the previous chapter. But a distinction of another kind becomes necessary, and that is between "surplus" and "accumulated fund"—the surplus being understood to be only such a portion of the accumulated fund as exists over and above the actual requirements of the Office to meet its engagements. In fact, the term must be understood in its strict sense, of a remainder over and above actual requirements. If any method could be devised for *separately* testing the several sources of profits enumerated in the previous chapter, the finance of Life Assurance might be cleared of a great deal of mystery. According to the present method, the proceeds from all sources find their way into the general funds of the Company, from which they have to be separated, in the aggregate, by laborious actuarial investigation—their individual, or their relative values never being really known—except perhaps in the single case of interest on investments.

To return to the comparison between mercantile and assurance balance-sheets. A merchant or a tradesman, by means of stock-taking, and an annual or more frequent audit of his books may, by simple process, arrive at a comparatively correct estimate of his profits or loss over any given period; and every prudent man will do so. The items in a trading balance-sheet comprise, on the one side the market value of the stock in hand, book, and other simple contract debts, with cash at bankers or otherwise invested. On the other side are his liabilities for goods purchased and otherwise, consisting of unpaid accounts, acceptances running, or overdrawn banking account. The commodities dealt in have easily ascertainable market values; with customary periods of credit, or discount for cash payment; and generally bearing a customary rate of profit on the net cost. These items, contrasted with those of an assurance balance-sheet, show at once the facilities of the one as against the other.

The objects of an Assurance balance-sheet, or, more properly speaking, a statement of the assets and liabilities of an Assurance Office are, as we have seen, almost precisely the same as the balance-sheet, or financial statement, of a mercantile firm, and, for the sake of future reference, may be here set out more formally :—

First.—To determine the actual financial condition of the Office with regard to its capability of meeting all its present and future pecuniary engagements.

Second.—That if a surplus be found to exist, to determine what portion of it, if any, is fairly available and disposable as realised profit.

In *form* also great similarity exists. Two or three items on either side comprise the account. But how few understand the months of hard labour. and the years of hard study, which are concentrated in the production of these same items in the case of the Assurance Office!

Two lines will frequently include all the assets. 1. The various securities, investments, cash, and other funds in hand. 2. *The present value of the future premiums to be received under the life policies existing at the date of such valuation.* To this is sometimes added a third, enumerating the value of the Offices, furniture, and stamps in hand—not to say that some of the modern Offices have stated as an asset the sums *actually expended* in founding the Office! On this point more will be said hereafter. The value of Offices, &c., may properly be included under the head of securities, due allowance being made from time to time for depreciation, or for improvement, if any has been made. On the other side of the account, as against the assets, have to be ranged: 1. The *present value of the annuities granted by the Office.* 2. *The present value of the sums assured, and payable on the death of members*, or on the happening of other events. 3. Claims allowed, but still unpaid—the period for payment not being arrived: and 4, Any money taken, or loan or deposit, or any debts on simple contract standing against the Office. The balance being available surplus. Here is the actual balance-sheet of an old Office, made out exactly on the plan described: except that it has not so many items on either side the account:—

ASSETS.		
Gross amount of securities, money in Bank, and other funds		£270,496 1 6
Present value of the future annual contributions from members		484,448 14 6
		754,944 16 0
LIABILITIES.		
Value of annuities granted by the Society	£41,389 5 6	
Present value of sums assured to members	606,959 5 7	
Claims allowed, and still unpaid	10,449 13 6	
		658,798 4 7
Surplus fund o. available money		£96,146 11 5

Now it is these "present values" which consitute the essential difference between assurance and mercantile balance-sheets. The questions of the probable duration of life, as shown by the mortality tables, and the probable rate of *interest* as determined by the past experience of Offices generally, are here brought to bear in full force: and the slightest mistake in either of these particulars may prove fatal to an office. Mr. Morgan, in one of his addresses, gave the members of the *Equitable* an insight into the process by which present values are derived. "To obtain the value of each policy in this Society, as it was originally granted," he says, "together with the whole of the several additions which have been made to it, *three* separate operations have become necessary: 1st. To ascertain the present value of the reversion of the sum originally assured after the extinction of the life. 2ndly. To ascertain the present value of the reversion of the additional sum after the extinction of the same life; and 3rdly. To ascertain the present value of all the annual payments which will probably be made hereafter in this policy. The latter value, substracted from the sum of the two former, will give the value of the policy, or the money which the Society owes to the person assured, for his interest in the same." Then follows an illustration, which we tabulate:—

Thus, £1,000 assured on a life of 32, net premium, £27 18s. 6d., at the age of 50 is worth	£608 13 0
Bonus of £500 is worth	304 6 6
Sum	912 19 6

Following the process:—

The present value of an annuity of £27 18s. 6d. for that time is 12 2-5th years' purchase...	345 19 6
Leaving the Office value of policy	£567 0 0

The above values are drawn from the Northampton Table, upon which, as we have already seen, the rates of the *Equitable* Office were and are based. It may be noted here, as absolutely essential, that all the values employed in any one valuation should be drawn from the same mortality table, and that that table should be one from which the rates of the Offices are derived. On this point, Mr. Samuel Ingall, the Actuary of the *Imperial* Life Office, forcibly impressed the select committee on Assurance Associations, 1853. "Suppose, for instance," he says, "an Office were to adopt the premiums deduced from the Northampton Tables at 3 per cent. interest, and, in making up its accounts, should take another table of mortality representing life as of much longer duration, it would, in many instances, produce what Actuaries term a negative value to the policy: that is to say, it would make the value of the future premiums very far exceed the value of the reversionary sum which the Office is bound to pay." This point will be touched upon again as we proceed. Mr. Samuel Brown refers to it as one of the means employed to deceive the members, or the public, with regard to the real position of an Office.

Confining our attention now solely to Assurance balance-sheets, we may remark that, in all the main elements, the same principle of valuation is employed by all the leading actuaries. In some points of detail, however, considerable difference of opinion and practice prevail. "The simple theoretical way of conducting the process," says Professor de Morgan, "is to ascertain the value of every policy: that is, to ascertain how much should be given to the holder of each policy to renounce his claim, the Office also abandoning the future premiums. When this is done, it is obvious the *Office is not solvent unless the assets arising from the accumulations of former years be sufficient to pay the values of all the policies, and thus to buy them all up.* Supposing the Office able to do this, with a capital remaining larger than would be necessary to create a permanent fund for the expenses of management, *the surplus of the capital is profit.* Otherwise, calculate the present value of all premiums due to the Office, and also the present value of all claims to which it is liable. To the former add the sum total of the assets of the Office, *and to the latter add the present value of a perpetuity equal to the expenses of management.*" This last point opens up a question with which we shall have to deal more at length presently.

Another writer points out that the true method of determining the actually existing surplus "must have some connexion with that which would be followed if the Company wished to break up, dividing its assets fairly among the assured." And a third fully confirms the views we have already expressed:—

> "The first question in any investigation with a view to a division, is the ascertainment of the *amount* of profit at any given period. This is a matter requiring very careful treatment. A mercantile firm, however extensive and varied may be their property and affairs, or a bank, however speculative may be a portion of its investments, proceed to a valuation of their assets upon rules and principles which ordinary intelligence and prudence suggest, and any considerable mistake will at once become apparent to those concerned; but a Life Assurance Society, *from the peculiar nature both of its property and obligations, might readily fall into errors, which, while they were of a very serious kind, might not be even suspected to exist for a long series of years.* On the one side of the balance sheet stand, as the property of the Society, its realized funds and investments, with the present value of all the premiums due by the members; on the other side as debt stands the present value of all the sums assured."

It certainly is not our intention to enter upon or discuss the purely mechanical details of conducting a valuation. Both Mr. Morgan and Professor de Morgan have already shewn the process of valuing policies singly; and this is the process, although an exceedingly laborious one, most generally adopted in valuations for division of surplus. Except where these separate values are to be used in the distribution or appropriation of the surplus, we are inclined to think that this labour is very unprofitably bestowed. We believe that all the policies may be arranged into groups classified according to age, or if desired according to age and duration of membership; and that the results so obtained would be far less liable to errors than those obtained by the separate valuation process. It is not unfrequent with the more carefully conducted Offices to find both these methods adopted; and as the differences are generally almost imperceptible the verdict may fairly be claimed for the process involving the least trouble.

We are glad to find ourselves not unsupported in this view. An able writer on the subject of Bonuses in the *Assurance Mag.* (Vol. I. p. 23, part 2), speaking of the "excessive labour attendant upon a valuation of each risk separately," denies the corresponding advantages, and adds:—

> "On the contrary, a very great disadvantage arises from the increased liability to error, which such a proceeding necessarily involves. . . . We believe we are quite within the mark in saying that the results would be identical even when the number of Assurances in each class does not exceed six or eight If the number (he points out in fairness) in many of the classes be less than these there is certainly nothing to be gained by a classification, but otherwise it is undoubtedly the preferable alternative."

Returning to the general question, it is easily apparent that any material error in these actuarial estimates might prove fatal to an office, and ruinous to its members. Suppose such an error to be made as indicated the existence of a considerable surplus, when the *fact* might be that there was a very small surplus or none at all, and the Office on the strength of such valuation proceeded to a division of its imaginary surplus, the dilemma which would ensue can, as the newspaper writers are wont to express it, be better imagined than described: although at least one such case is on record. Assuming, however, that everything is correctly carried out, the general results of a valuation are not difficult to understand. In the case of a Society having available assets to the extent of half a million, the premiums (after provision for expenses) to be received on the existing assurances being valued at another half million, while the claims under the policies amounted by valuation to only £750,000 it is clear that such an Office would be in a position to pay £133⅓ for every £100 assured; while if the results presented the least reverse the Office could only afford to pay £75 for each £100 policy held. If therefore every Office was bound to make periodic returns, based upon valuations by competent persons, the public would possess a guarantee of security which no mere cash account can furnish.

In the valuation or balance sheet, given at page 293, the surplus shewn in favor of the Society is very considerable, *and providing that the net, and not the gross premiums only*, are brought under valuation, (which we may fairly assume to be the case in question) such as no Office could be expected to show which had not existed for many years under sound and economic management. It is very different from the valuations presented by many Offices. If the surplus had been far less the Office might still have been in a sound position. Indeed if the two sides of the account had exactly balanced, leaving no surpl of assets at all, upon the supposition of the net premi valued, the Office might still be pronounced solvent, although under such circumstances it could not be pronounced as flourishing.

Many other important considerations attach to this portion of our subject; but as their discussion at this point might tend rather to confuse than instruct, we have dealt with them in a separate chapter, under the head of "Insurance Finance," in the close of this division; and we shall now therefore proceed with the points more immediately connected with the distribution of the surplus. This may be best done in a separate chapter.

If any apology should be considered necessary, on account of our entering more fully into the Bonus question than might be expected in a popular work, we find it in the fact that most previous writers have, as it appears to us, passed over that portion of the subject more lightly than its importance would seem to justify. With the exception of Mr. Sang's Essays on Life Assurance, and one or two papers in the first volume of the *Assurance Magazine*, the subject does not appear to have been handled in a connected form. Scattered observations are found throughout the works of the several writers quoted in these chapters, but few general readers have either time, inclination, or opportunity for consulting such a number of works on one particular point. Our aim is therefore to place the entire question before the reader in a comprehensive form. In these days, when the public talk learnedly on investments, and have a keen eye to Institutions that "pay and flourish," agents must not be behind hand on the Bonus question, if they mean to do well for their Offices, or for themselves.

CHAPTER III.

PERIODS FOR INVESTIGATION AND DISTRIBUTION OF SURPLUS; AND PROPORTIONS DISTRIBUTED.

Having now indicated the sources of profit, together with the objects and modes of correctly ascertaining them, we may proceed to consider their appropriation. This, indeed, involves a double consideration: first, the periods of dividing them, and next, the methods for doing so. We here proceed to consider the former.

We have already, in these pages, entered upon many points in practice, where great diversity of opinion prevails; and where, in consequence, their treatment, having due regard to impartiality, has been somewhat perplexing. But have we approached any point presenting greater difficulties, in this respect, than the present? If, indeed, we had simply to expound our own views, without regard for those of others, we might make light work of our task. But would this be fulfilling the purpose of a Hand Book? We think not. The plan we laid down in the commencement of this work was not to expound and enforce learned views of our own—there are already more books of this kind than find readers, for no subject has been more, or more ably, written upon than Life Assurance—but to present our readers with a correct and impartial summary of the views and opinions of our great English writers and authorities—past and present—on all the important points in connection with the theory and practice of Life Assurance. How far we have succeeded it is for our readers, and not for ourselves, to judge. If we have sacrificed originality, we have taken the higher aim of utility—and as utilitarianism is a charge peculiarly laid to the present age, we must with patience await our reward.

Will our readers as patiently overlook this digression? We are to come back to the diversity of opinion which exists on points of assurance practice, more particularly on that now before us. An instance is at hand. When the *Law* Life Assurance Society was about to be established, its promoters were undecided as to the plan they should lay down for the distribution of profits, if any should chance to be made. Knowing the point to be an important one, in connection with the future prosperity of the Office, they consulted with two of the leading actuaries of that period, viz., the late Mr. William Morgan, of the *Equitable*, and Mr. Joshua Milne, the actuary of the *Sun* Office, better known in these pages as the compiler of the Carlisle Table of Mortality, and the author of a learned treatise on annuities—also with three other gentlemen, who were candidates for the actuaryship of

The advantages arising from *selection* in a pecuniary sense we have already discussed. It does not follow that because in the end select lives constitute no better average than that presented by the general mortality returns of the kingdom that therefore selection is of no advantage. It is admitted by all authorities that select lives do present better averages for a certain (undefined) number of years after selection: and here at least a source of profit is obvious. If the persons who are expected, by the Tables, to die in the first year do not die till the second year the advantage to the Office is clearly the receipt of an extra year's premium, and the interest realised upon the principal sum which has to be paid at death: and so on for each additional year over which such benefit extends. Now this when applied to a great number of lives will be no mean source of profit; but it is one which will only be participated in by Offices under strict management.

It is undoubtedly from this source that many Offices are enabled to declare the large bonuses which frequently characterise "*first* divisions of profits"—bonuses which the Offices find it afterwards impossible to maintain honestly. Against the temporary advantages of selection in a young Office may undoubtedly be placed the greater proportionate expenditure to which as a young Office it is subject; and unless some plan of meeting the preliminary expenditure similar to that we have proposed in our chapter on "management expences," be adopted, the one may be set off against the other. But all these points will be reviewed in our chapter on the "finance of life assurance," in the present division.

Taking a more critical view of the subject, a distinction strikes us which it may be useful to point out here: that is a distinction between SURPLUS and PROFITS. The former may be held to arise—assuming a correct Mortality Table to be employed—1. From the "Loading"—less expences and losses; and 2. From the realisation of excess of *interest*. The PROFITS may be held to arise—1. From the issue of non-participating and term policies. 2. From lapsed and surrendered policies; and 3. From the favourable selection of lives. This being simply an altered classification of the sources already named.

Now in an Assurance Office professing to be guided by the principles of strict equity, a reason for this distinction could be shown. The SURPLUS we should at once assign to the policy-holders as belonging to them exclusively: for if the conditions which gave rise to it could have been accurately determined at the time of calculating the premiums the amount might have *remained* in the pockets of the assured, for the premiums in the aggregate would have been less by the amount of the surplus so derived. This will apply to policy-holders in *Mixed* or *Mutual* Offices. In a Proprietary or non-participating Office the assured voluntarily exclude themselves from such benefit.

Following out our proposition, the PROFITS, as distinguished from the surplus, remain to be disposed of. These in the case of a *Mixed* Office should belong entirely to the shareholders; and in the case of a *Mutual* Office should go to the formation of a reserve fund to preserve the stability of the Society, as subscribed capital provides for or guarantees the stability of a Mixed Office. In the case of a purely Proprietary Office the profits from *all* sources go to the proprietors, and therefore no such distinction as we have named applies to them.

We are fully aware that to carry our proposition into practice would involve some considerable additional labour, both at the periods of actuarial investigation, and at other times; but those who are familiar with the amount of energy and talent continually brought to the solution of such questions by professional actuaries will agree with us that neither difficulties or actual labour would be preventatives to the plan provided it were believed to be advantageous.

We introduce the point here as one of the considerations naturally arising out of our subject, and whether it be pursued practically or not we are quite sure that the recollection of this distinction will greatly facilitate the complete understanding of the bonus question; and in this our present object will be fully accomplished. We now leave the point till we come to discuss the various modes of distributing the surplus. Vide chapter 4 of this division.

We cannot conclude this chapter more appropriately than by referring the reader to the following remarks, from an article in the *North British Review*, several times before quoted. All the leading points connected with bonuses are there discussed *impartially*—and we are glad to be able to strengthen our position, even at the expense of some space—and we may add, to instruct the reader from such an able source. The writer says:—

> "It should now be easy to explain how what are called *profits* arise, and to show how important it is that these should be divided upon sound and equitable principles. *Profits are the surplus contributions of the assured above what is found to be necessary to meet the risks undertaken by the assuring Office.* In the case of a *Proprietary* Company, these may be correctly denominated 'profits,' because the fund so arising is just the free balance on their books after fulfilling or providing for all their obligations; but in the case of a *Mutual* Society, they are not, properly speaking, profits at all but surplus capital, being proportional advances by the members more than the purposes of the Society required from them. In both cases the fund must arise either because the mortality assumed in fixing the rate of contribution has proved higher than the actual deaths among the members, *or the rate of interest obtained has been more than was calculated upon.* In practice, as may be inferred from what has been already said, the hypothesis on which tables for practice are generally constructed is considerably within the line of actual probability in both these respects. *Profits therefore arise because the mortality is not so great, and the per centage on investments is greater than was assumed in fixing the rates of contribution.* If mortality could be measured and predicted with as much certainty (as to any thousand individuals for example) as the setting of so many suns, and if interest could be meted and recorded in its flowing with accuracy as absolute as that which registers the progress of its concurrent stream of time, and were Assurance business done upon net calculations, thence deducted, *no profits would ever arise*, the contributions being fixed at the precise sums necessary to meet the relative risks. Every separate assurer would, from the first, pay exactly what was just and needful, *and no more.* The scheme of business would work out its results like Babbage's famous machine, and thus all the contest and confusion which have attended 'distribution of profits,' and 'declaration of bonuses,' in so many Associations would have been avoided. Every member would receive just what he was entitled to and no more—there being no occasion or temptation, or even possibility, in a Society so constituted and worked, for one member getting more than he ought, because it would be visibly taken from another, who would in consequence receive less."

Such, however, is not the case, and the writer tells us why. We have, he says, to deal in the matter not wholly with mathematical elements. Mortality may have its general laws ascertained, but can gation. If he survive this, then his prospective bonuses become, so to speak, exchanged for his full right of participation, and he commences a new series, subject to the rate of prospective bonus for the time being fixed.

We rank the system of PROSPECTIVE BONUSES as amongst the real improvements which have taken place in the practice of Life Assurance; of course, however, they do not apply to Offices making annual valuations, as their real effect is to remedy the necessity for this step.

We think under such a system as we have just described, coupled with sound management in other respects, investigations at periods of five years are sufficiently frequent for all practical purposes. In this view we are strengthed by the fact, that it is far more generally adopted by practical Actuaries than either more remote or more frequent periods. Out of the Offices now existing, about two-thirds of them divide quinquennially: and the practice would not be persevered in by such men if found in the smallest respect disadvantageous.

On an attempt being made some few years since by some of the members of the *National Provident* Office for more frequent distributions of the surplus, Mr. Charles Ansell, the Actuary of the Society—than whom few have had more experience on points of practice—urged the following reasons against the proposed step, and by deduction, against frequent periods of division generally.

> "There is another element necessarily introduced into the affairs of an Assurance fund, and that is that you assure to some assurers £50 and to some £5,000. That is an element which gentlemen not much accustomed to deal with the inside of Life Offices very frequently lose sight of If it could be predetermined what would be the rate of mortality, and what would be the rate of interest, you still have another element that not only may throw you out of your average, but actually does—and that very materially indeed, everywhere, and more particularly in your own Institution."

And as the Institution in question is far too firmly established to be prejudicially affected by the results of its experience being known, we may quote the following instances which Mr. Ansell then quoted in support of his views:—

> "I find in the year 1847 the per centage of the claims upon the premiums of the year was 23 and a fraction per cent.; but in 1849, which from some cause or other was an unfavourable year, it suddenly jumped up from 25 to 38 per cent. upon the premiums of the year. The Chairman reminds me that that was the cholera year, and these things are likely to recur in that or some other form. In 1850, it again fell from 38 to 29; in 1852, it fell again to 31 per cent; in 1853, it rose suddenly to 51 per cent *And it is to avoid these jumps and inequalities that it seems to me undesirable that you should disturb the present arrangement* (of quinquennial divisions) which appears to have worked with moderate evenness."

In conclusion, he cites the results of the two quinquennial divisions. In that ending in 1847, the claims had averaged 27 per cent. of premiums, and at that ending in 1852, 32 per cent., the increase being no greater than might fairly be expected. He pointed out, as we have already done, that the only persons who suffered by distant periods of division were those who died in the intervals between them: but this we have shown may be chiefly remedied by the system of prospective bonuses.*

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* *Vide Post Magazine*, vol. 16, p. 42-3.

PROPORTIONS OF PROFITS DIVIDED.

WE have hitherto confined ourselves rather to the purposes, modes, and times of investigation than to the actual proportion of profits divided. It is now time to deal with this latter point. Every one knows that, in a *Mixed* Office, a portion of the profits only is promised to the assured, while in a *Mutual* Office the whole is supposed to be set apart for this purpose. But every one may not know that it frequently happens, in a Mutual Society, that such a share of profits is set aside or carried forward for the purposes of a reserve fund, that the actual sum divided amongst the members is below that which a Mixed Office, by reason of its guaranteed capital, can afford to divide. It would, indeed, be an endless task to attempt here minutely to trace the different proportions awarded by the different Offices: they range from two-thirds of nine-tenths, as in the case of the *London Assurance* Corporation, down to fifty per cent., as is the case with the *London and Provincial Provident*, or from seventeen-twentieths, as in the case of the *London and Continental*, to twenty twenty-first parts, as with the (old) *Provident!* Every grade between such limits exists, and the whole are set forth in a carefully prepared table at the close of the next chapter. By far the most frequently adopted proportion is that of *four-fifths* to the assured, and the remaining fifth to the shareholders.

Mr. Babbage long since noted some of the points we have referred to. He says, "the share which some Offices contract to return, although nominally one-half or two-thirds, is in truth, *from the manner of apportioning it*, perhaps not one quarter part of the profits! And hence the public form an erroneous opinion from the proportions offered by the different Offices." And even as to *Mutual* Offices, if the whole profits were really divided, the different classes of members are by no means sure of getting their proper proportions; which circumstance has led Professor de Morgan to remark that "the members of a Mutual Insurance Office are not properly represented in their list of Directors, unless the individuals composing it are of very different ages." This objection however can only apply to Offices where the proportions are not fixed under the Deed of Settlement or Act of Parliament.

On the general question of the inequality of the proportions divided, Mr. Jellicoe has remarked, "We have Societies whose charges are equal, returning sometimes *fifty*, sometimes *eighty* per cent. of the surplus; and amongst such as vary in their rates, the proportion returned to the contributors is not unfrequently in the inverse ratio of the average amount of them." Mr. Neison offered to the Select Committee on Assurance Associations a solution of the origin of these differences and discrepancies, which appears not only reasonable but worthy of careful consideration by the promoters of Assurance Offices.

"Often," he says, "the deeds are drawn by mere lawyers—men who are not technically acquainted with the modes of calculation necessary in the determination and distribution of the profits of an Assurance Company. One-third of the profits in one

> Company may be more than two-thirds of the profits in another Company; for by the terms and conditions of the deeds of settlement of some Offices it is provided that a given proportion of the profits arising among the participating policies only shall be appropriated as a bonus to those policy-holders; while according to other deeds of settlement the same. or some other proportion of the gross profits, from all sources of the Office business, is declared to be applicable to the profit policy-holders; therefore although apparently from the prospectuses of two different Companies the same ratio of profits is awarded to the assured, there may still, in fact, be a very wide difference in the actual amount so appropriated, in consequence of the varying restrictions in their deeds of settlement, and this is seldom, if ever, clearly understood by the public. In both instances the policy-holders may nominally get, we will say, three-fourths of the profits; but in one they may get that share of the gross profits, and in the other the participating class of policy-holders may get only that share of profits of their own policy and of the residue."

It was a rule with the Managers of the *Equitable*—and certainly a very good one—never to divide the whole of the surplus: in fact, generally a very large portion was left untouched, and therefore kept on accumulating. In 1776, when the first investigation took place, the surplus of £25,000 was only reduced to £14,000. In 1786, when the next investigation took place, the surplus of £164,000 was reduced only to £110,000. In 1793, when the surplus, by an approximated computation, appeared to be £302,000, it was reduced to £203,000; and in 1800 at the period of the fourth investigation, the surplus of £480,000 was reduced to £225,000. "In all these instances, there-therefore," says Mr. Morgan, "the moderation of the general Court suffered a very large proportion of the surplus to remain a fund, for the benefit of those that should succeed them." Most other Offices have adopted a similar course. In some instances, as much as one-third of the surplus is carried forward, but more frequently one-fourth or one-fifth, which are fair proportions, for the purposes of security, and to provide for the fluctuations which may arise in later periods, either in the mortality experienced, or the rate of interest realised. In reports upon bonus investigations, the amount carried forward is generally stated.

A writer in the *Assurance Magazine* (vol. 1, p. 27, part 2), evidently not unfamiliar with the subject, says:—

> "The surplus, then, being satisfactorily ascertained, it appears only consistent with justice and propriety that it or its value, as exactly as possible, should be returned to the contributors. The practice of reserving a part of it seems to be necessary, for there is not only the excess included in the future premiums, but very generally a subscribed capital to fall back upon, beside the fund reserved for the liability. The surplus is the property of the contributors of that day, and the complication of interests which must arise from the keeping back any part of it is carefully to be avoided. *In short, the main object of the periodical adjustments made by Life Assurance Companies is the return of what has been overpaid to those who have contributed to the excess.*"

There are few persons, however, who would not prefer to see a respectable reserved fund accumulated, even at the expense of their own apparent present advantage.

Some of these points will be followed up in the next chapter.

CHAPTER IV.

THE MODE OF DISTRIBUTING THE SURPLUS.

We have in the previous chapter, to some extent, prepared our readers for the diversity of practice and opinions he may expect to meet with in the consideration of this part of the subject.

A writer, from whom we have before quoted, appears to have prepared a special introduction for our present chapter. "When the amount of profit or surplus fund has, at the assigned period, been ascertained, the next question in order, and not inferior in importance is, *how is that fund to be divided? The question of amount is one of scientific calculation — the question of distribution is one of equity.* As might be supposed, the latter is emphatically the *questio vexata* among assurers and assured, upon which every Office professes to hold and apply the only true principle of division, and *upon which it is perhaps impossible in practice to realize perfectly the full results of the most unexceptionable theory.*"

He points out that, althought absolute and exact equity may be unattainable, the principle of division should be sound, and such as to afford, in its application, the nearest approximation to even-handed justice; and continues:—

> "By special compact, the whole of the parties interested may be bound to a particular method of division as, for instance, by the deed of constitution, or the bye-law of the Association, it may be provided, that the first 5,000 policies shall alone participate in the surplus fund [as is the case in the *Equitable*], or that none shall share in such surplus until they have paid premiums equivalent, with interest, to the sum assured [as in examples which will follow]. In such cases, it may be admitted, that as all parties know the rule before they join the body so constituted, none of the members can fairly complain when they find the laws consistently carried out *Others, however, are entitled to maintain, in the name of sound principle, that by so agreeing to conduct business, the effect is to divide, among a favoured class what was contributed* proportionally by all, and that, to the extent of the surplus, the principle applied is not that of equalizing life, and providing against premature death—the great and proper object of life assurance—but of conferring a bonus and bounty upon long life, *which is the gambling principle of the Tontine.*"*

Before proceeding to details, there are several considerations of a general character which require to be noted. Mr. Sang has forcibly pointed out what indeed our readers must, before this, be thoroughly familiar with, viz., that what are called profits are simply (in some form or another) *the over-payments of the members.* "Could the mortality amongst those members be accurately predicted, and the profits of investment foretold, the premiums could be computed so as just to meet the engagements, in which case, while there never would be any surplus fund, each member would receive exactly the benefit from the Northampton Tables at 3 per cent. interest, and, in making up its accounts, should take another table of mortality representing life as of much longer duration, it would, in many instances, produce what Actuaries term a negative value to the policy: that is to say, it would make the value of the future premiums very far exceed the value of the reversionary sum which the Office is bound to pay." This point will be touched upon again as we proceed. Mr. Samuel Brown refers to it as one of the means employed to deceive the members, or the public, with regard to the real position of an Office.

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* *Vide North British Review.*

Confining our attention now solely to Assurance balance-sheets, we may remark that, in all the main elements, the same principle of valuation is employed by all the leading actuaries. In some points of detail, however, considerable difference of opinion and practice prevail. "The simple theoretical way of conducting the process," says Professor de Morgan, "is to ascertain the value of every policy: that is, to ascertain how much should be given to the holder of each policy to renounce his claim, the Office also abandoning the future premiums. When this is done, it is obvious the *Office is not solvent unless the assets arising from the accumulations of former years be sufficient to pay the values of all the policies, and thus to buy them all up.* Supposing the Office able to do this, with a capital remaining larger than would be necessary to create a permanent fund for the expenses of management, *the surplus of the capital is profit.* Otherwise, calculate the present value of all premiums due to the Office, and also the present value of all claims to which it is liable. To the former add the sum total of the assets of the Office, *and to the latter add the present value of a perpetuity equal to the expenses of management.*" This last point opens up a question with which we shall have to deal more at length presently.

Another writer points out that the true method of determining the actually existing surplus "must have some connexion with that which would be followed if the Company wished to break up, dividing its assets fairly among the assured." And a third fully confirms the views we have already expressed:—

> "The first question in any investigation with a view to a division, is the ascertainment of the *amount* of profit at any given period. This is a matter requiring very careful treatment. A mercantile firm, however extensive and varied may be their property and affairs, or a bank, however speculative may be a portion of its investments, proceed to a valuation of their assets upon rules and principles which ordinary intelligence and prudence suggest, and any considerable mistake will at once become apparent to those concerned; but a Life Assurance Society, *from the peculiar nature both of its property and obligations, might readily fall into errors, which, while they were of a very serious kind, might not be even suspected to exist for a long series of years.* On the one side of the balance sheet stand, as the property of the Society, its realized funds and investments, with the present value of all the premiums due by the members; on the other side as debt stands the present value of all the sums assured."

It certainly is not our intention to enter upon or discuss the purely mechanical details of conducting a valuation. Both Mr. Morgan and Professor de Morgan have already shewn the process of valuing policies singly; and this is the process, although an exceedingly laborious one, most generally adopted in valuations for division of surplus. Except where these separate values are to be used in the distribution or appropriation of the surplus, we are inclined to think that this labour is very unprofitably bestowed. We believe that all the policies may be arranged into groups classified according to age, or if desired according to age and duration of membership; and that the results so obtained would be far less liable to errors than those obtained by the separate valuation process. It is not unfrequent with the more carefully conducted Offices to find both these methods adopted; and as the differences are generally almost imperceptible the verdict may fairly be claimed for the process involving the least trouble.

We are glad to find ourselves not unsupported in this view. An able writer on the subject of Bonuses in the *Assurance Mag.* (Vol. I. p. 23, part 2), speaking of the "excessive labour attendant upon a valuation of each risk separately," denies the corresponding advantages, and adds:—

> "On the contrary, a very great disadvantage arises from the increased liability to error, which such a proceeding necessarily involves. . . . We believe we are quite within the mark in saying that the results would be identical even when the number of Assurances in each class does not exceed six or eight If the number (he points out in fairness) in many of the classes be less than these there is certainly nothing to be gained by a classification, but otherwise it is undoubtedly the preferable alternative."

Returning to the general question, it is easily apparent that any material error in these actuarial estimates might prove fatal to an office, and ruinous to its members. Suppose such an error to be made as indicated the existence of a considerable surplus, when the *fact* might be that there was a very small surplus or none at all, and the Office on the strength of such valuation proceeded to a division of its imaginary surplus, the dilemma which would ensue can, as the newspaper writers are wont to express it, be better imagined than described: although at least one such case is on record. Assuming, however, that everything is correctly carried out, the general results of a valuation are not difficult to understand. In the case of a Society having available assets to the extent of half a million, the premiums (after provision for expenses) to be received on the existing assurances being valued at another half million, while the claims under the policies amounted by valuation to only £750,000 it is clear that such an Office would be in a position to pay £133⅓ for every £100 assured; while if the results presented the least reverse the Office could only afford to pay £75 for each £100 policy held. If therefore every Office was bound to make periodic returns, based upon valuations by competent persons, the public would possess a guarantee of security which no mere cash account can furnish.

In the valuation or balance sheet, given at page 293, the surplus shewn in favor of the Society is very considerable, *and providing that the net, and not the gross premiums only*, are brought under valuation, (which we may fairly assume to be the case in question) such as no Office could be expected to show which had not existed for many years under sound and economic management. It is very different from the valuations presented by many Offices. If the surplus had been far less the Office might still have been in a sound position. Indeed if the two sides of the account had exactly balanced, leaving no surplus of assets at all, upon the supposition of the net premiums only being valued, the Office might still be pronounced solvent, although under such circumstances it could not be pronounced as flourishing.

Many other important considerations attach to this portion of our subject; but as their discussion at this point might tend rather to confuse than instruct, we have dealt with them in a separate chapter, under the head of "Insurance Finance," in the close of this division; and we shall now therefore proceed with the points more immediately connected with the distribution of the surplus. This may be best done in a separate chapter.

If any apology should be considered necessary, on account of our entering more fully into the Bonus question than might be expected in a popular work, we find it in the fact that most previous writers have, as it appears to us, passed over that portion of the subject more lightly than its importance would seem to justify. With the exception of Mr. Sang's Essays on Life Assurance, and one or two papers in the first volume of the *Assurance Magazine*, the subject does not appear to have been handled in a connected form. Scattered observations are found throughout the works of the several writers quoted in these chapters, but few general readers have either time, inclination, or opportunity for consulting such a number of works on one particular point. Our aim is therefore to place the entire question before the reader in a comprehensive form. In these days, when the public talk learnedly on investments, and have a keen eye to Institutions that "pay and flourish," agents must not be behind hand on the Bonus question, if they mean to do well for their Offices, or for themselves.

CHAPTER III.

PERIODS FOR INVESTIGATION AND DISTRIBUTION OF SURPLUS; AND PROPORTIONS DISTRIBUTED.

Having now indicated the sources of profit, together with the objects and modes of correctly ascertaining them, we may proceed to consider their appropriation. This, indeed, involves a double consideration: first, the periods of dividing them, and next, the methods for doing so. We here proceed to consider the former.

We have already, in these pages, entered upon many points in practice, where great diversity of opinion prevails; and where, in consequence, their treatment, having due regard to impartiality, has been somewhat perplexing. But have we approached any point presenting greater difficulties, in this respect, than the present? If, indeed, we had simply to expound our own views, without regard for those of others, we might make light work of our task. But would this be fulfilling the purpose of a Hand Book? We think not. The plan we laid down in the commencement of this work was not to expound and enforce learned views of our own—there are already more books of this kind than find readers, for no subject has been more, or more ably, written upon than Life Assurance—but to present our readers with a correct and impartial summary of the views and opinions of our great English writers and authorities—past and present—on all the important points in connection with the theory and practice of Life Assurance. How far we have succeeded it is for our readers, and not for ourselves, to judge. If we have sacrificed originality, we have taken the higher aim of utility—and as utilitarianism is a charge peculiarly laid to the present age, we must with patience await our reward.

Will our readers as patiently overlook this digression? We are to come back to the diversity of opinion which exists on points of assurance practice, more particularly on that now before us. An instance is at hand. When the *Law* Life Assurance Society was about to be established, its promoters were undecided as to the plan they should lay down for the distribution of profits, if any should chance to be made. Knowing the point to be an important one, in connection with the future prosperity of the Office, they consulted with two of the leading actuaries of that period, viz., the late Mr. William Morgan, of the *Equitable*, and Mr. Joshua Milne, the actuary of the *Sun* Office, better known in these pages as the compiler of the Carlisle Table of Mortality, and the author of a learned treatise on annuities—also with three other gentlemen, who were candidates for the actuaryship of

£1,000 participating policy of five years' standing the addition would be £50. Sum payable under the policy £1,050. At the end of another five years assume a second distribution at the same rate per cent. per annum: here the operation of the plan is seen. The right of participation dating back to the time of taking up the policy, the second bonus addition is £100, in addition to the previous £50. At the third division, on the same assumption, the addition will be £150, viz., 15 years at £1 per cent. per annum, in addition to the £150 previously added: making, taking total claim under the policy, £1,300. And as the age of the policy advances the effect becomes necessarily more striking. The next division at the rate assumed would add £200 more to the policy.

This mode of distributing the surplus originated with the *Equitable* Society; its purpose being to remedy the injustice which had been committed upon the members of that Society by the unnecessarily high premiums charged during the early period of its operations. As the principle has been much discussed, and is an important one, we purpose offering a few additional observations upon it at the close of the present chapter.

VI. ON SUMS IN DEPOSIT.

The suggestion that the surplus should be distributed in relation to the sums remaining "in deposit to the account of each insuree," will hardly be understood by non-professional readers. The chapter to follow this is intended to be on the "Finance of Life Assurance;" and it will there be shewn that an Office should have a certain portion of the premiums received on each policy remaining in hand, increasing with each year of the currency of the policy—the aggregate of these deposits making up the sum of the accumuluted funds of the Office, or the sum to which, *at least*, the accumulated funds *must* amount, *if the Office be sound:* anything left over and above being *surplus*.

This plan would, to some extent, approach the Tontine principle; but as it is not now actually in practice, so far as we are aware, we will not pursue it further.

VII. ON THE "CHARGE" OR "LOADING."

The system of distributing the surplus in relation to the additions made to the "pure" premiums appears to us exceedingly equitable: and if *all* the surplus arose from this one source it would also be theoretically correct. We are not aware that it has yet been acted upon, but, like all the suggestions of Dr. Farr, it deserves careful consideration from those engaged in the practice of Life Assurance.

Professor de Morgan clearly advocates this last method of distribution, for he says, (*Essay on Probabilities*, p. 287,) "having ascertained the amount of what each person has paid *over and above what was necessary for the risk*," the most equitable manner is "to consider such person as entitled to the sum which *his overplus* would purchase at his death, if the bonus be made by addition to his policy; or to a diminution of premium answering the annuity on his life which the overplus would buy if the bonus be made by diminution of premium;" and Mr. Jellicoe argues in the same direction :—"The true mode of dividing the surplus is in proportion to the amount, at the prevailing rate of interest, of the payments made by each contributor *over and above those required for the risk.*"

We need, perhaps, hardly point out to the reader that the principle of distributing the surplus of an Insurance Office is of far greater moment than the simple consideration of how each particular policy-holder will apply, or have applied, the allocation, of surplus made to himself: although this point is not without interest.

It is customary with most Offices to give their policy-holders the option of several methods of applying their ascertained share in the surplus, viz., either

1st. Of adding a sum to the policy to become payable with the principle sum named in the policy. This is called the *reversionary bonus* plan; and to this our previous examples have been chiefly confined.

2nd. Of applying the bonus to a *reduction of the future premiums.* This reduction may either be spread over the whole of life until the whole premiums be exhausted; or over a term of years dating till the next division. The former plan is generally preferred, although the effect is not so immediately perceptible.

3rd. Of receiving the bonus in CASH—or, as it is generally termed, at its *cash value*—at the time of declaration.

To these have been added another plan, viz.,

4th. Of giving a *new policy* for the amount of the reversionary bonuses, free from the payment of premiums; or, a new policy, for such a sum as the cash value of the bonus would assure *for one year:* the future annual premiums to be paid by the holder of the policy. This latter plan is of rather a fallacious character.

Now it will simplify the bonus question greatly if we assume (and the assumption is pretty well justified by the practice) that all bonus additions are, in the first instance, ascertained in *cash.*

Let us try and illustrate this point. Assume an Office where the valuation has just been completed, and where an actually available surplus of £75,000 is shown. This must be in *cash* to be available. Also, further assume (as the most simple for the purpose) that the mode of distributing this surplus is to be by an annual per centage on every £100 assured. It being found that the Office has on its books 5,000 policies, averaging £500 each: this is divisible into 25,000 distinct sums of £100 each. But the term of membership varies: 1,000 of the policies have been five years in force, another 1,000 only four years, another but three years, the next but two years, and the last thousand but one year. Now tabulating these results, we get to 75,000 distinct allocations of surplus, thus:—

1st.	1,000 policies	of £500 each,	5	years existing	= 25,000	parts.
2nd.	”	”	4	”	= 20,000	”
3rd.	”	”	3	”	= 15,000	”
4th.	”	”	2	”	= 10,000	”
5th.	”	”	1	”	= 5,000	”
					75.000	

Hence the available surplus of the Office is capable of allotting £1 in cash to each £100 assured for every year the assurance has been in force. So that the holder of a £1,000 policy, five years in force, takes £50 in cash. A holder of a similar policy of four years' duration, would take £40; of three years' duration, £30; of two years, £20; of one year, £10; the whole surplus being thus exhausted.

Here then the policy-holders have their bonuses in cash. We are not saying that such a large cash bonus is to be expected, or advocating the principle of a distribution by a per-centage on the sums assured. We are simply desirous of showing that the distribution of the surplus is by *cash allocations in some form*—what that form may be depending either upon pre-arranged conditions, or the views of the actuary employed.

The next step is to take several policy-holders, each entitled *to the same share in the surplus*, but desirous of applying it in different forms, as may best suit his circumstances. Let the sum to be dealt with be £50 *in cash* in each case; and let A, B, C, D, E, and F, represent the parties; their respective ages being 30.

A, elects for a *reversionary bonus*. £50 paid down at the age of 30, will purchase a new assurance for £110, payable at death, which, added to the £1,000 assured, brings the amount to £1,110.

B, elects to have his bonus applied to the liquidation or reduction of his premiums for the whole period of life. £50 at age 30 will purchase an immediate life annuity of £3. Hence, instead of paying £20* per annum premium on his policy, the amount of the annuity will be deducted, and he will pay £17 for the next five years: when, if the bonus be at the same rate, the amount will secure him a still greater reduction on account of his increased age.

C, elects to apply his bonus to a reduction of his premium for the next five years only. £50 at age 30 will purchase an annuity for five years of £11, reducing his premium during that period by that amount. But at the end of that period the premium reverts to its original sum, unless the next bonus be applied in like manner.

D, determines upon a *cash* bonus: he therefore keeps his £50, and goes on paying the same premium as he started with.

E, elects to take a *free policy* for the reversionary value of his bonus. The amount of such policy may be the same as A's addition to his policy; or if E determines upon a non-participating policy, which is issued at lower rates, he may have £120 instead of £110. The latter policy, however, would be entitled to bonus additions.

F, makes a large show with his bonus, by taking out a new policy for £2,000, for which his £50 pays the first premium; but the future premiums have to come out of his own pocket if the policy be kept in force.

We shall now be fully understood when we assert, that it is a matter of little moment to an Office which of the methods of application the assured may select, although it may be a matter of considerable moment to the assured himself, for reasons which will be fully entered upon in our chapter on the selection of an Office.

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* About the rate at age 25.

It must, however, be remembered that *all* Offices do not give the several options just detailed. Some, as the *London Life*, *Metropolitan*, *Hand-in-Hand*, *Clergy Mutual*, *National*, *Great Britain*, *Family Endowment*, *Britannia*, and one or two others, apply their bonuses *to reduction of premiums only*. Another, the *Life Association of Scotland*, gives the option of *cash*, or, if in health, a *new policy*. But most of the Offices give either of three alternatives, viz., addition to sum assured, reduction of premiums, or cash.

It has been the subject of some discussion amongst writers—leaving out the actual advantage, which *must* be nearly equal to the Office—as to which method of applying the bonus is most theoretically correct. Mr. Sang argues, that each member having agreed to pay, "a certain premium during the currency of his policy, or during part of that currency, on condition that he shall obtain a certain payment when the policy falls, and shall have a share in the profit or loss of the Society, it seems to me," he continues, "perfectly clear that the agreement is *to last during the whole currency of his policy, and that no member is entitled to claim his share of the profit until his policy expire. He is not entitled to draw out his share of the profit at any intermediate time.*" Another writer speaks of the reversionary bonus plan as the safest in the long run, "because any excess in one year will be compensated in future years:" whereas, if the cash be distributed, this adjustment cannot take place.

But, on the principle of prevention being better than cure, Mr. S. Ingall would prefer a cash distribution: because, "if the Society declare a surplus exceeding the amount of assets, it would be *impossible to pay it down in cash.*" Hence, he says, it would be a very "wholesome regulation," that "nothing should be treated as profits that are not capable of being paid in cash."*

On the other hand, we are disposed to believe the public taste is leaning towards reduction of premiums. The Offices exclusively adopting this plan mostly do a good business; and we think its adoption favourable to the extension of Life Assurance.

TONTINE BONUSES.

The *retrospective* bonus plan, as we have already said, was originally adopted by the *Equitable;* and it applied with great justice to the early members of that Society, for the simple reason that they had been charged rates of premium which turned out to be so extravagantly high that they were on three occasions reduced. These reductions, however, would not compensate the assured for their outlay in the past, although it would protect them in the future: but the retrospective bonus system, *i. e.* the extending the bonuses back to the date of the policy did give the assured the justice they were entitled to, and is one of the many instances of the honourable manner in which the affairs of this Society were conducted. We shall quote Mr. Morgan's words in illustration of the course pursued:—

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* Report of Select Committe, question 1961.

"When the premiums were *first reduced*, in the year 1776. it was in consequence of a very careful and minute investigation into the real state of the Society, by computing the value of each policy of assurance, and comparing the whole amount of these separate values with the capital of the Society at that time. During the five following years, it was found that the number of deaths among the members was so much less than the table of observation supposed them to be, from which the premiums were computed, that it was determined to have recourse to another table, which gave higher probabilities of the duration of human life; or, in other words, which supposed the decrements of life to be fewer than the table then in use. When this arduous task was accomplished (which required about 20,000 computations), the Society adopted the new premiums (in 1782)); but very properly charged them with an addition of 15 per cent., in order to proceed with caution, and to prevent any alarm in the public, from too great a reduction in its terms at one and the same time.

"In the year 1786," he continues, "an investigation, similar to what had been formed in the year 1776, was carried into execution; the result of which was found to be so favourable to the Society, that the 15 per cent. which had been charged upon the premiums in 1782 was taken off, and the terms of assurance were reduced to their present state. *I need not observe that, at these two last periods, compensations were made to the members then existing for the higher premiums which they had hitherto paid, compared with those to be taken in future, by increasing their claims in proportion to the number of annual payments which they had previously made.*"*

The effect of these retrospective additions on the funds of the Society may be seen by a reference to the foot note below. It was such as to induce Mr. Morgan, in his address of 3rd December, 1795, to remark, that if they were continued at the same rate as they were commenced they would, *in a few years*, "amount to such a sum as would exhaust not only the surplus stock, *but even the whole capital of the Society*,"—and this, notwithstanding the fact referred to in the same address, and already quoted, that not one half of the whole-term policies effected in the Society during the first 25 years were continued in force until they became claims: thereby shewing, in this respect, a very considerable source of profit.

The grounds which led the *Equitable* to the adoption of what were in effect *Tontine bonuses*, were exceedingly reasonable and just, but the *financial* reasons against its continuance very early shewed themselves. A system, however, so calculated to benefit the older policy-holders was not likely, in a Mutual Society, to be voluntarily discontinued. We have it, indeed, on the authority of Mr. Morgan that in some cases under this system, the sums claimed under the policies had been increased above *one hundred and forty per cent.!* Accordingly, notwithstanding the remonstrances and warnings of the Actuary, the plan was, with various modifications, continued down to the close of the year 1816, when it was finally abolished, and, by way of equivalent, and also by way of the greater protection of the funds, the participation in the surplus was limited to the 5,000 oldest policy holders, a regulation still continued in force.

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* The following particulars regarding the *Equitable* bonnuses may be found useful for future reference. They are taken from Mr. Morgan's address to the Court in 1809. "In 1786, by an addition of £1 per cent., together with the addition of 1½ per cent. in 1781, the sums originally assured were increased £22,670 from £977,330 to £990,000† or in the proportion of 1 to 43. In the year 1793, by an addition of £2 per cent., together with the preceding addition in 1791 of £1 per cent., they were increased £112,859 from £2,976,476 to £3,089,335, or in the proportion of 1 to 26. In the year 1800, by an addition of £2 per cent., together with an addition of £1 per cent in 1795, they were increased £479,761 from £3,904,685 to £4 384,446, or in the proportion of nearly 1 to 8. But in the present year, if £2 10s. be added to them, they will be increased, including the former additions £2,094,643, or in the proportion of more than 1 to 4; that is, instead of £8 024,000 originally assured, the whole sum, including all the additions, will amount to £10,118,571, and the present value of the claims on those original sums will be increased from £4,557,757 to £5,845,000; or, in other words, over and above the sums already paid in addition since 1781, amounting to £222,000 and upwards, the Society will have agreed to distribute among its members such a sum as in our present payment is equal to £1,287,242. When it is considered," adds Mr. Morgan, "that, exclusive of all this, the sum of £72,600 has been paid ever since the year 1800, for the interest of those members who have surrendered their policies to the Society, and that above £35,000 has been paid during the last four years on account of Income Tax, *it is impossible not to admire such an Institution, and to express an ardent wish that, proceeding in the same course of moderation, economy, and prudence it may always adopt such measures as shall secure, and ever extend, its benefits to the latest period.*" This wish has been fully realized hitherto.

† *This should be £ 1,000,000, but it is printed £ 990,000 in original address.—NOTE, 1868.*

Mr. Morgan's views of the importance of this change are fully expressed in his address to the Court in December, 1819. The following brief extract therefrom will answer our present purpose. "From the experience of the last three years, the regulations of (commenced in) 1817, appear to have had no other effect than that of rather lessening the number of *new* assurances, which however considerably exceed the number of old assurances cancelled, so that the Society still continues to increase, only more slowly. This," he adds, "is the necessary consequence of such a measure, and was to be expected. *But it should be observed on the other hand, that the Society may now regard its increase* WITHOUT APPREHENSION!"

Passing from the financial considerations to those purely of equity —although in a Mutual Society at least these will be closely associated—we again leave ourselves in the hands of the *North British* reviewer, endorsing as we do nearly all that he has said on the subject:—

> ". . . . . No competent defence has ever been made of the system by which the long lives reap their enlarging shares of benefit at successive periods of investigation, by profits being allotted to them in proportion to the amount both of their original assurance, *and of additions made by previously declared bonuses.* . . . The long-standing and numerous policies of Associations conducted upon the plan, so far from being attractive to new members, will probably, with increasing experience, be found to be the reverse. The oftener the periods of allocation recur, the greater the evil and the injustice under such a system of division. This accumulative system of bonus additions, if brought into action every ten or every seven years, is bad enough; but when it is carried into effect every five years, our astonishment is, that it does not produce results more startling than any that have yet appeared in advertising type. . . . . . In truth, it needs no prophet to predict, that if this accumulative plan of heaping up bonuses on the old policies were rigorously and permanently carried out, the discouragement to new entrants would become so great, that few would be attracted to such Offices,—that with a decreasing or even stationary business, the fallacy would become more apparent than it does, or can do, so long as business is flowing in with an annually increasing volume; and that thus an accumulative process of decline would ensue, and the Office would effectually wind itself up, and shut its own door."

He afterwards qualifies, to some extent, the above remarks:—

> "Still, however, it must be admitted that the Offices which, within endurable limits, favour the old lives, will in all probability retain a stronghold on the support of many. Most men are apt to think well of their own prospects of longevity. The assured who dies after paying only a few premiums, is, from narrow views, and a mistaken application of the ordinary mercantile analogy, regarded as causing 'a loss' to the Society. The pure principle of Life Assurance is, it is thought, very well so far; but, in the estimation of some, it is rendered all the more attractive by having superadded a bonus-lottery, in which the long livers draw the prizes."

In conclusion, he re-asserts, as a demonstrable fact, *that the profits have arisen out of the contributions of* ALL *the members.* He adds:—

> "Each several policy-holder, therefore, from the youngest to the oldest has a right to participate in what each has a share in creating. *The interest of each in the surplus fund is just the difference between the payments actually made, and those which would have*

been demanded had the precise rate of mortality been foreknown. The scheme of division, therefore, is certainly the most equitable, and most in accordance with the strict principles of Life Assurance, which distributes the profits among all the policy-holders without preference of classes, and so as to include the members who die early as well as those who live long."

In this opinion we most entirely concur. The man who has paid *one* premium, which was greater than the charge for the actual risk incurred by the Office, is as much entitled to the return of *his* contribution to the surplus as the man who has paid *fifty* premiums! We even go to the length to assert with Mr. Farren that, "When a man says, 'If I live on, I shall get a larger sum added to my policy,' he is perverting the principle of assurance, which is to make those who live long pay for those who die quickly; it is to endow the widow and children, *and not the grey-headed man.* The *Tontine* plan of distribution, therefore, in any of its forms, finds very little favour with us.

NON-BONUS PLAN.

While most persons are seeking to assure in Offices giving large bonuses, and most writers are recommending them to do so, there are others of the latter who set their faces against the bonus system altogether, calling it speculative, and surround it with all sorts of evil consequences. The writers who pursue this course have generally some particular Office to serve; nevertheless, we must take their arguments for what they are worth, and they claim some consideration. Here is Mr. Sturrock arguing against the system of large bonuses, and those who do not know the Office he is "writing up," may be surprised by the line of argument pursued.

> "The system of assuring with Offices giving *large Bonuses* is very disadvantageous where assurances are strictly for the protection of families. Suppose that at the age of 30 a yearly sum of £25 was to be devoted to that purpose. In the Offices charging high premiums, that sum would secure £936; in those charging the moderate premiums, £1.205. The difference between the sums, £269, is exactly the same as an immediate bonus of that amount, to be paid by the latter Office to the family in case of early death. Before the same benefit could be obtained from the high premium Office, the assured would have required to have lived for fourteen years after his assurance, even though so high a rate as 2 per cent. were to be added yearly. This defeats the true purpose of assuring, as the object of every parent should be to secure at once as large a sum as possible, and he who resorts to Offices exacting high premiums undoubtedly sacrifices the interests of his family for benefits in a great degree only prospective and contingent.

There is no doubt that even bonuses, like everything else, may be purchased "too dearly."

Mr. Sang objects to the *bonus* system, on grounds we have already discussed. He says, "That it enables the present members to appropriate to themselves all the over contributions of their predecessors:" and he cites an instance in which a Life Office anticipated the profits to the extent of £126,060. He admits that, in all probability, the error was unintentional, but says that, "it rather aggravates than palliates the evil, that, on account of the involved nature of the transaction, all this may be done unwittingly, with the best intentions in the world."

We will not pursue this point further. Enough has been said to give the reader an impartial outline of the subject, which is all we aim at. Any points bearing on the subject, which have been hastily passed over, will be discussed in the following chapter, which treats of a subject of vital importance.

We said just now that it was a matter of little moment to an Office in what manner the assured applied their bonuses: that is to say, whether they take the cash, accept of a reduction of premiums, or claim a reversionary bonus. When viewed, however, in relation to Tontine bonuses the matter assumes a different aspect—or at least the aspect is presented in an aggravated form. The reader knows that before a sum is assured upon any life that life undergoes a strict medical examination, and if symptoms of disease are apparent the life is rejected. Now in the case of a bonus distribution the health of the assured is not taken into account. The reader will say, "of course not, there is no occasion: bonuses are declared out of *past profits*, and every man is entitled to his proportion during his period of membership." So far he only reiterates a principle we have already laid down. But the difficulty arises in this respect—that most Offices give the assured an *option* as to the application of the share of surplus allotted to them; and then comes into play the right of selection *against the Office*, upon which we have already offered some observations.

It will be said, "this objection applies to the *reversionary bonus* plan under any aspect." Granted—but not to the same extent. Turning back to the examples at page 310, A, who takes a reversionary bonus for his £50 cash, of £110, being at that time on his death-bed, obtains a very decided advantage by the exercise of his right of election. But extend this to the Tontine system. Assume that A's policy has been in force 15 years, and that the bonus is at the same rate as is assumed in the examples, viz., £1 per cent. per annum during the currency of the policy. What is the consequence? Why, that he takes £150 instead of £50; and the reversionary bonus this will purchase is £330 instead of £110! This is the inevitable effect of the Tontine system upon the funds; and at the older ages, where life becomes still more precarious, the option under any, but more particularly under *this* system, becomes still more dangerous.

We have no desire to fix the whole of the evils of the reversionary bonus plan upon the Tontine system. We simply say of this system that it presents, in an aggravated form, all the weak points of the bonus system. And as to *reversionary bonuses* generally, it is clear that the option should be accompanied with a *strict medical examination*. A reversionary bonus is clearly nothing more or less than effecting a new Assurance: a reversionary bonus under the Tontine system is the same, but generally for a larger amount.

Out of these considerations the reader will learn why some of the Offices may have considered it desirable to limit the application of the bonus to *reduction of premiums* only.

Date of 1st Division of Profits.	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
1843	*Albert*	Mixed	Four-fifths..	Every 3 yrs.	Participating policies	Per centage on prems. paid	By Addition or reduction, cash	1869
1849	*Albion*	Mixed	Four-fifths..	Every 3 yrs.	After 5 premiums	Per centage on prems. paid	„ Addition or reduction	1867
1824	*Alliance*	Mixed	Four-fifths..	Every 5 yrs.	After 5 premiums	Per centage on prems. paid	„ Addition or reduction	1869
1851	*Argus*..................	Mixed	Nine-tenths.	Every 5 yrs.	Policies 5 yrs. old		„ Addition, reduction, or cash	1871
1823	*Atlas*	Mixed	Less expnses.	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1869
	Birmingm. Alliance	Mixed	Four-fifths..	Every 5 yrs.	Policies 5 yrs. old			
1861	*Brighton & Sussex Mutual Provident*	Mutu.	Whole	Every 5 yrs.	All policies	Per centage on prems. paid	„ Reversionary bonus	1866
1852	*Brit. Emp. Mutual*	Mutu.	Whole	Every 3 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1870
1857	*British Equitable..*	Mutu.	Whole	Every 3 yrs.	Policies 3 yrs. old		„ Addition, reduction, or endowment assurance	1869
1861	*British Mutual* ...	Mutu.	Whole	Every 5 yrs.	All policies	Per centage on prems. paid	„ Addition, reduction, or cash	1872
1871	*British Workman's*	Mutu.	Four-fifths..	Every 5 yrs.	Policies 5 yrs. old		„ Addition, reduction, or en- [dowment assurance...	1871
1859	*Briton Medical & General*..........	Mixed	Four-fifths..	Every 5 yrs.	Participating policies	Per centage on prems. paid	„ Extinction of premiums ...	1867
1843	*Caledonian*	Mixed	Five-sixths..	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1871
1847	*Church of England*	Mixed	Four-fifths..	Every 5 yrs.	Policies 5 yrs. old	1-10th of profits as a clergy fund	„ Addition or reduction	1868
1845	*City of Glasgow* ...	Mixed	Two-thirds..	Every 5 yrs.	All policies	Per centage on sums assured	„ Addition, reduction, or cash	1869
1832	*Clerical, Medical, and General*......	Mixed	Five-sixths..	Every 5 yrs.	All policies	Per centage on prems. paid	„ Addition, reduction, or cash	1872
1836	*Clergy Mutual*	Mutu.	Whole	Every 5 yrs.	All policies	Per centage on prems. paid	„ Reduction of premium only	1871
1867	*Commercial Union*	Mixed	Four-fifths..	Every 5 yrs.	Participat^{ns}-pols.	Per centage on prems. paid	„ Addition, reduction, or cash	1867
1832	*Crown*	Mixed	Five-sixths..	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1870
1840	*Eagle*.....	Mixed	Four-fifths..	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	
1834	*Economic*	Mutu.	Whole	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1869
1835	*Edinburgh*	Mixed	Nine-tenths.	Every 7 yrs.		Per centage on prems. paid	„ Addition, reduction, or cash	1872
1800	*Emperor*	Mixed	Seven-tenths	Every 3 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Adddition, reduction, or endowment assurance	1869
1846	*Eng. & Scottish Law*	Mixed	Nine-tenths.	Every 5 yrs.	Policies 3 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1870
1849	*Equity and Law*...	Mixed	Nine-tenths.	Every 5 yrs.	Policies 1 yr. old	Per centage on prems. paid	„ Addition, reduction, or cash	1869
1786	*Equitable Society..*	Mutu.	Whole	Every 10 yrs.	Oldest 5000 policy holders	Per centage on sums assured		

Date of 1st Division of Profits.	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
	European	Mixed	Four-fifths. .	Every 5 yrs.	Policies 7 yrs. old		By Addition, reduction, or cash	1869
1842	*Friends' Prov. Inst.*	Mutu.	Whole	Every 5 yrs.	Participatns-pols.	Proportion to profits on each policy	„ Addition or reduction	1867
1848	*General*	Mixed	Four-fifths. .	Every 5 yrs.	Participatns-pols.	Per centage on prems. paid	„ Addition, reduction, or cash	1867
1869	*General Provident*	Mixed						
1849	*Great Britain*......	Mutu.	Whole	Annually ...	Policies 5 yrs. old	Per centage on prems. paid	„ Reduction of premium only	
1855	*Gresham*	Mixed	Four-fifths. .	Every 5 yrs.	Participatns-pols.	Proportion to profits on each policy	„ Addition, reduction, or cash	1870
1828	*Guardian*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 1 yr. old	Proportion to profits on each policy	„ Addition, reduction, or cash	1870
1842	*Hand-in-Hand* ...	Mutu.	Whole	Annually ...	Policies 5 yrs. old		„ Reduction of premiums, 52½ per cent	
1868	*Hercules*	Mixed	Four-fifths. .	Every 5 yrs.	Participatns-pols.	Per centage on prems. paid	„ Addition, reduction, or cash	1868
1831	*Imperial*	Mixed	Four-fifths. .	Every 5 yrs.	All Policies	Per centage on sums assured	„ Addition, reduction, or cash	1870
1869	*Imperial Union* ...	Mixed	Five-sixths. .	Every 3 yrs.	Participatns-pols.		„ Endowment assurance	1869
	International	Mixed	Two-thirds. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	
1857	*Lancashire*	Mixed	Four-fifths. .	Every 5 yrs.	All Policies	Per centage on sums assured	„ Addition	
1840	*Law Life*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centago on prems. paid	„ Addition, reduction, or cash	1870
1855	*Law Property*	Mixed	Four-fifths. .	Every 5 yrs.	Participatns-pols.	Per centage on prems. paid		1871
1859	*Law Union*	Mixed	Less 5 pr. cnt.	Every 5 yrs.	All Policies	Per centage on sums assured	„ Addition, reduction, or cash	1869
1846	*Legal and General*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	
1845	*Life Association of Scotland*	Mixed	Not fixed ...	Annually ...	Policies 6 yrs. old	Per centage on prems. paid	„ Cash or new assurance	
1868	*Life Investment* ...	Mixed	Four-fifths. .	Every 3 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Endowment assurance	1868
1850	*Liverpool & Lond. and Globe*.........	Proprietary...	Special	Annually ...	Policies 5 yrs. old	According to a fixed scale...	„ Addition or reduction	
1837	*London Assurance Corporation*	Mixed	Two-thirds. .	Every 5 yrs.	All Policies	Per centage on prems. paid	„ Addition, reduction, cash, &c	
1868	*London & Lancash.*	Mixed	Four-fifths. .	Every 5 yrs.	Participatns-pols.		„ Addition, reduction, cash, or endowment assurance.	1868
1873	*Lond. & Manchester*	Mixed	Three-frths..	Every 7 yrs.				1873
1855	*Lond. & Prov. Law*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old		„ Addition, reduction, or cash	1870
1809	*Lond. & Southwark*	Mixed	80 per cent. .	Every 5 yrs.	Participating policies	Per centage on prems. paid	„ Addition, reduction, or cash	1869
1812	*London Life Assn.*	Mutu.	Whole	Every 7 yrs.	Policies 7 yrs. old	Per centage on prems. paid	„ Reduction of premium only	1868

Date of 1st Division of Profits.	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
	Manchester Prov...	Mixed	Four-fifths. .				By Addition, reduction, or endowment assurance	
1859	*Marine & Gen. Mut.*	Mutu.	Whole	Every 5 yrs.	Policies 3 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1869
	Metropolitan	Mutu.	Whole	Annually ...	Policies 5 yrs. old	Per centage on prems. paid	„ Reduction of premium only	
1862	*Midland Counties. .*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1872
	Mutual	Mutu.	Whole	Annually ...	Policies 2 yrs. old	Per centage on sums assured	„ Addition, and, after 8 years, reduction	
	Mut. Prov. Alliance	Mutu.						
1868	*Nationl. Assurance of Ireland*	Mixed	Two-thirds. .	Every 5 yrs.	Policies 3 yrs. old		„ Addition, reduction, or cash	1868
1871	*National Guardian*	Mixed	Four-fifths. .	Every 3 yrs.	Participat^{ng}-pols.		„ Addition, reduction, or cash	1871
	Nat. Life Society...	Mutu.	Whole	Annually ...	Members of 5 yrs. and upwards...		„ Bonus, or reduction of premium	
1842	*National Provident*	Mutu.	Whole	Every 5 yrs.	Participat^{ng}-pols.	Per centage on prems. paid	„ Addition or reduction	1867
1866	*National Union* ...	Mixed	Four-fifths. .	Every 3 yrs.				1869
1830	*North British and Mercantile*	Mixed	Nine-tenths.	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1872
1846	*Northern*	Mixed	Nine-tenths.	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Reduction or cash	
1816	*Norwich Union* ...	Mutu.	Less reserve [fund	Every 5 yrs.	Policies 1 yr. old	Per centage on prems. paid	„ Addition, reduction, or cash	1872
1846	*Nottinghamshire & Derbyshire*	Mixed	One-third ...	Every 7 yrs.	Policies 4 yrs. old		„ Addition or reduction	1872
	Patriotic	Mixed	Two-thirds. .				„ Addition, reduction, or cash	
1848	*Pelican*	Mixed	Four-fifths. .	Every 7 yrs.	Policies 5 yrs. old	Per centage on prems, paid	„ Addition, reduction, or cash	1868
1871	*Planet*	Mixed	Nine-tenths.	Every 5 yrs.	Participat^{ng}-pols.	Per centage on sums assured	„ Addition, reduction, or cash	1871
1860	*Provincial*	Mixed	Four-fifths. .		Policies 3 yrs. old		„ Addition, reduction, or cash	1870
1869	*Provincial Union. .*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1869
1813	*Provident*	Mixed	20-21st parts	Every 7 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Cash or reduction	1869
1847	*Provident Clerks'. .*	Mutu.	Whole	Every 5 yrs.	Policies 3 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1870
1861	*Prudential*	Mixed	Four-fifths. .	Every 5 yrs.	All policies	Per centage on prems. paid	„ Addition or reduction	1871
1863	*Queen*.........	Mixed	Three-frths. .	Every 5 yrs.	Participat^{ng}-pols.	Per centage on sums assured	„ Addition, reduction, cash, or free policy	1868
1847	*Reliance*	Mutu.	Whole	Every 3 yrs.	Policies 2 yrs. old	In proportion to surplus premiums paid	„ Addition or reduction	1867
1854	*Royal*....................	Mixed	Two-thirds. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1869
1848	*Roy. Exch. Assrnce.*	Mixed	Two-thirds. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition or reduction	1871

Date of 1st Division of Profits	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
1848	*Royal Farmers'* ...	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	By Addition	
1819	*Rock*	Mixed	Two-thirds. .	Every 7 yrs.	Policies 2 yrs. old	Per centage on prems. paid	,, Addition, reduction, or cash	1868
1869	*Sceptre*	Mixed	Four-fifths. .				,, Addition, reduction, or endowment assurance	1869
1833	*Scottish Amicable*. .	Mutu.	Whole	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	,, Addition, reduction, or cash	1872
1841	*Scottish Equitable*.	Mutu.	Whole	Every 3 yrs.	Policies 5 yrs. old	Per centage on sums assured	,, Addition or reduction	
1870	*Scottish Imperial*. .	Mixed	Nine-tenths.	Every 5 yrs.		Per centage on sums assured	,, Addition, reduction, cash or endowment assurance	
1851	*Scottish National*. .	Mixed	Nine-tenths.	Every 4 yrs.	Policies 4 yrs. old	Per centage on sums assured	,, Addition, reduction, or cash	1868
1841	*Scottish Provincial*	Mixed	Not fixed ...	Every 5 yrs.	All policies	Per centage on sums assured	,, Addition, reduction, or cash	
1853	*Scottish Provident*.	Mutu.	*Special Scheme.—No Profits until Premiums improved at Interest amount to Sum assured in Policy.*					
1825	*Scot. Widows' Fund*	Mutu.	Whole	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	,, Addition, reduction, or cash	1873
1842	*Scottish Union*......	Mixed	Five-sixths. .	Every 5 yrs.	Participatns.pols.	Per centage on prems. paid	,, Addition, reduction, or cash	1871
1852	*Sovereign*	Mixed	Three-frths.	Every 6 yrs.	Participatns.pols.	Per centage on prems. paid	,, Addition, reduction, cash, or endowment assurance..	1868
1835	*Standard*	Mixed	Not fixed ...	Every 5 yrs.	Policies 5 yrs. old	Per centage on sums assured	,, Addition, reduction, or cash	1870
1848	*Star*	Mixed	Nine-tenths.	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	,, Addition or reduction	1869
1837	*Sun*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	,, Addition, reduction, or cash	1868
	Union	Mixed	Four-fifths. .	Every 5 yrs.	All assurers	Per centage on sums assured	,, Addition, reduction, or cash	1868
	United Eng. & Scot.	Mixed	Four-fifths. .	Every 5 yrs.				
1856	*United King. Temp.*	Mutu.	Whole	Every 5 yrs.	All assurers	Per centage on prems. paid	,, Addition or reduction	
1846	*Universal*	Mixed	Three-frths. .	Annually ...	Policies 6 yrs. old		,, Addition or reduction	
1830	*University*	Mixed	Nine-tenths.	Every 5 yrs.	Policies 5 yrs. old	Per centage on sums assured	,, Addition, reduction, or cash	1869
	Victoria (Benefit).	Mutu.	Whole	Every 5 yrs.	Participating policies	Per centage on prems. paid	,, Addition, reduction, cash, or endowment assurance.	
	Wesleyan & Gen...	Frndly.	Whole					
1812	*West of England*...	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Proportion of profits on each policy	,, Addition, reduction, or cash	1869
1866	*Western Counties and London*	Mutu.	Whole	Every 3 yrs.	Policies 2 yrs. old	Per centage on sums assured	,, Addition, reduction, or endowment assurance	1869
1842	*Westminster & Gen.*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	,, Addition, reduction, or cash	1867
	Whittington	Mixed	Four-fifths. .	Every 3 yrs.	Policies 2 yrs. old	Per centage on prems. paid	,, Addition or reduction	
1860	*Yorkshire*	Mixed	Four-fifths. .	Every 5 yrs.			,, Addition or reduction	1870

EXPLANATION OF BONUS TABLE.

The intention of the preceding Table is to supply, at a single glance, all the more generally required information regarding the distribution of profits by the several Life Offices now in existence. The Table is unavoidably imperfect. Still it contains a very large amount of information never brought together in a connected form previously. The arrangement is intended to elucidate, as far as possible, the points discussed in the previous chapters.

In making inquiries as to the date of the first division of profits, some confusion has arisen with some of the Offices, as to the periods when they first issued participating policies: an actual division of profits does not generally take place for several years after this event. Several of the older Offices have only during the last few years admitted the assured to participation; and in one or two cases no division has yet been really made.

The column as to the principle upon which the profits are allotted to the members is in an unfinished state. Some of the Offices appear to have no fixed rule; the point apparently being determined by accident, necessity, or the caprice of the particular actuary employed to conduct the valuation. This does not apply generally to Offices having an actuary on their staff.

In the column stating the persons who are entitled to participate, the term "all policies" means all participating policies, irrespective of the term of membership.

Where we have not felt confidence in the accuracy of our information we have preferred to leave a blank—which, however, each reader ought to be able, without difficulty, to get filled up by the Office in which he is interested.

Out of the whole number of existing Offices there are not three whose prospectuses contain even the reasonable and necessary information contained in this Table—that is to say, which contain sufficient to answer all the requirements of the Table!

CHAPTER V.

THE FINANCE OF LIFE ASSURANCE.

In these days of financial disaster, when no Institution or Company will long be considered sound which is not in a position to prove itself to be so, it will neither be considered time ill-spent or labour ill-bestowed, to direct some attention to the finance of Life Assurance.

For the reasons stated in the previous chapters of this division, Insurance accounts are not of a class to be readily understood by persons wholly uninitiated; and it is sometimes almost as fatal to an Office to be considered too rich as too poor. A notable instance of this has occcurred in the history of the *Equitable* Society. In the year 1826 one of the *Directors* (*!*) of that Society proposed to divide a *million* of the surplus, *without ascertaining what that surplus might be!* "but the sound judgment of Mr. Morgan, the actuary, prevented the step being taken."* It is not very many years, either, since Mr. Babbage thought it necessary to guard his readers against a mistake, which he pronounced to be "not unfrequent;" viz.—that of consideing the capital accumulated and in the possession of a Society at any period, *as so much profit!*† And it is only about a century since that the Government actually entertained a similar view, and, as we have already seen, were about to take very unscrupulous steps in consequence.‡

Now, it generally happens, that however large the accumulated funds of an Office (as distinguished from its *surplus* funds) may be, it has corresponding liabilities. The real point of enquiry, therefore, turns the other way, viz., not whether the funds in hand are greater than the liabilities, but whether they are sufficient to meet them—all that exists over the sufficiency being clearly *surplus*.

But if even if, at any given period, a surplus be actually found to exist, it becomes a matter of considerable interest to the actuary, and of importance to the Office, to know *how* such surplus has arisen. It may happen that a surplus exists because the mortality for a certain period has been less than was expected under the Mortality Tables under which the Office was based, and therefore less than was provided for in the rates of premium. Or it may happen that during the particular period in question, the rate of interest realized has been higher than that anticipated; and as high rates of interest are generally indicative of monetary pressure, more policies are frequently lapsed or surrendered than at periods of greater prosperity; and whether this latter be a source of real advantage to the Office or not, it certainly bears the appearance of present advantage. On the other hand a disadvantageous state of the funds may be attributable temporarily to an unusually heavy mortality: although this is not a very probable supposition, and would (except under very special circumcumstances) be indicative of unsound management. There is very little fear of any deficiency arising from the rate of interest actually realized: as the lowest probable rate is (very properly) assumed in the calculation.

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* Samuel Brown's *Thoughts on Life Assurance*.

† Babbage's *Comparative View*.

‡ *Vide* page 41.

Now, assuming an Office to show an excess of funds from either of the causes first indicated in the preceding paragraph there would be no indication of permanent prosperity. On the contrary, by direct consequence of the small mortality in one period there exists, not only the probability, but the *certainty* of greater mortality at subsequent periods. So, again, if the prosperity of an Office at any given date be attributable to the realization of a rate of interest higher than the ordinary rate over an average of years, it requires no very deep knowledge of the subject to understand that this prosperity cannot be calculated upon as lasting.

As the point with respect to the results arising from a favourable mortality over any given period has some important bearings, we purpose to consider it more minutely.

If our conclusions on the subject of "selection," and the conclusions of the majority of writers we have here quoted, be sound, it follows that the mortality in a young Office, or amongst the newly assured lives in an old Office, will for several years be below the average; and therefore, the claims on the funds in respect of such lives will be smaller than that amongst an equal number of assured lives of longer standing. This, however, being a point well understood, no actuary, who valued his reputation, would lead a Company on to the division of any surplus resulting from this cause. Yet from the tone adopted at various meetings convened for receiving reports of actuarial investigations, as well as from the face of the balance-sheets presented, it is difficult to believe that such errors are not committed; and what is worse, committed wilfully.

Mr. Samuel Ingall has raised the voice of warning on this point. "If care be taken in the selection of lives," he says, "the mortality for a number of years will be very low, and if the Office attempts to divide its profits, assuming that that low rate of mortality will continue, *its members will be wofully disappointed at a future period.*" Other experienced writers have been equally emphatic on this point.

These preliminary observations will convey some idea of the nature of the points to be considered in the present chapter. The object to which they all, either directly or indirectly, point is the growth of the accumulated fund of an Assurance Office, and the proportion it should bear, at any given period, either to the premiums received, or the existing liabilities of the Office.

Dr. Farr, after pointing out the great importance (as we have already done) of determining the correct rate of premium to be paid for an assurance, has added, "one of still more vital importance in the finance of Life Assurance, is this: If A, aged 35, or any other age, pay a premium of £10, of £100, or of any other sum yearly into a Life Office, *what sum should that Office have to deposit to the account of A* at the end of the first, second, third, fourth, and every subsequent year in order that it might fulfil its engagements?"

Now it is hardly to be expected that the bulk of our readers should understand the full force of this proposition without some additional illustration. This we purpose to give, by calling in the aid of several other writers.

Mr. Samuel Brown has well explained that if a Company were started to assure lives at every age, from birth to extreme old age, and if the places of all the lives which dropped were supplied by others, from year to year, *without any increase in the members of the Society*, and without any improvement in the health of the assured, "*then* the mortality of the first year would be the same as the last, and there would be no increase in the numbers of the deaths, *because the average age of the members would remain the same.*" Now, in practice, it is impossible that such conditions can be realized, and here, therefore, so to speak, the difficulties begin. A Life Office cannot, in the very nature of things, secure that uniformity of operation which would test, in a natural form, the elements of its solvency: hence it has to resort to secondary, and scientific means, of doing so.

Mr. Morgan, in one of his able addresses to the Court of the *Equitable* Society, remarked:—"In a Society which is increasing the number of its members—and particularly as such increase cannot in the very nature of things be uniform year by year—the progress of the accumulated fund cannot be defined:—hence the necessity for periodic investigations." He draws an illustration in point from that Society which he so long and so nobly guided onward in its career of success:—

> "In the *Equitable* Society the Assurances are made upon lives of all ages, from eight to sixty-seven years; their number, instead of being limited, is continually increasing, and the sums assured at the end of the last year (1792) amounted to more than three millions. Is it, then, at all surprising, that its capital increases with great rapidity? It would be an alarming circumstance if the contrary were true. The period at which the claims and the premiums will become equal in an Institution of this kind must necessarily be very distant. If the Society be limited only to its present number, it is indispensably necessary that the premiums should continue to exceed the claims *for more than half a century, in order to enable it to fulfil its engagements*. But when it is considered that its members are continually increasing, the period is rendered still more distant, and it would indeed be a fatal mistake to conclude from the quarterly accounts,* which are laid before the members, that this increasing capital of the Society is, like the increasing capital of a tradesman, so much addition to its *profits*. It is, in fact, no more than so much addition to the fund which ought to be improved with the utmost care, in order to enable the Society to discharge those heavy demands which will infallibly hereafter be made upon it. And," he adds with becoming earnestness, "I have, in more instances than one, been a witness to the fatal consequences to this delusion, where the Societies, confiding in the magnitude of their capital, without having any regard to the magnitude of the claims which a few years would bring upon them, have indulged themselves in the belief of their growing

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* It was the custom with the *Equitable* to hold quarterly courts.

prosperity, till their ruin has become inevitable. I am, happy, however, to think that while Societies have begun in error and ended in disappointment, the determinations of this Society have hitherto been so temperate and prudent as invariably to improve its credit and usefulness. It is my earnest wish that it may always proceed with the same circumspection; and though I believe there is no reason for apprehension from the present members, yet it is possible, however flourishing the Society may be, to entertain too high an opinion of its wealth, and in consequence to adopt measures which may endanger its security."

What applied to the *Equitable* applies equally to all other Societies; and it would indeed be well if this sound advice was more generally followed.

In a subsequent address (Dec., 1819) he reverted to the same point, under another aspect.

"Though possessed," he says, "at this time of a surplus of more *than three millions*, it must be observed that the number of those who are to share in it is great in proportion, and, in consequence, that the sum which would have been sufficient in 1810 to provide for any given addition to the claims, will now, exclusive of the advanced age of the members, which renders it of greater value, be altogether insufficient. No conclusion therefore can be drawn as to the magnitude of the additions which a Society can afford to make, either from the amount of its capital, or even of its surplus stock, *unless regard is had at the same time to the number of its members*; and it may be comparatively as rich, and able to make those additions, when possessed of a surplus of £100,000, as when possessed of a surplus of one million. Hence, it appears (he adds), that this Society could with equal safety afford to add £1 per cent. to the claims in 1800, when possessed of a surplus of £484,000, as it can at present—when its surplus exceeds *three millions!*"

Mr. S. Brown furnishes us with equally important considerations to the same end:—

"Enough has been shown to prove that, both by theory and the practical results, in existing Companies, the mortality must continue to increase for many years after admission, even if the actual experience of the Societies corresponds with the tables used for their calculations. But if a more favourable rate prevailed, the period in which the maximum of mortality would be attained must either be longer deferred, or the claims would increase at the last with such rapidity, as after a long course of confidence in growing prosperity, would excite alarm in the minds of those members of the Company who had not considered that this was a consummation which ought to have been foreseen and duly provided for. The continual accumulation of the Capital, then, in the early existence of a Society, which many not accustomed to the subject, are apt to consider as the effect of excessive caution, and are sometimes with difficulty restrained from breaking in upon, ought to be regarded *as a sacred fund not to be diminished* without the most skilful and diligent inquiry into the future prospects as well as the past history of the Society."

And again:—

"The mortality in a Society must continue to increase annually for many years after its establishment. The provision, which is made for future years, ought to be one which contemplates the Society attained to its full growth; and consequently, in the earlier periods of its existence a continual surplus must accrue, and be carefully improved, *with its accumulations*, to meet the demands which at some future time will inevitably be made on the funds. . . . . Few persons are aware of the length of time which must elapse before a Society attains its maximum of mortality."

What are the deductions to be drawn from the preceding considerations? That the peculiar circumstances attending the growth of Assurance Offices give rise to the necessity of actuarial investigation. That the peculiar nature of their liabilities requires the careful accumulation of their funds for a long series of years in order to meet their distant and probably increasing engagements; and that any departure from these courses, either by neglecting to test the growth of the fund, and comparing this with its liabilities, or any attempt to *impo*verish the fund by premature or unjustifiable divisions of so-called profits, will prove highly disastrous, if not immediately, at least by the time the Society shall arrive at maturity. And this is precisely the case. So far, then, we have progressed satisfactorily; but still we have arrived at no very definite idea of what should be the progressive growth of an Assurance Fund in relation to the functions it has to fulfil. This is the next stage to be determined.

We shall again fall back upon Mr. Morgan:—

> "It must occur to every person (he says) that in an Institution of this kind, which engages for an annual sum to pay another sum *forty or fifty times as large*, on the extinction of a life, whenever that event shall happen, that it will be necessary that those payments should be made for several years before they shall have accumulated to such an amount as will be sufficient to pay the sum assured. Suppose, then, that instead of one life there be 1,000 lives upon which such annual payments are made, it is evident that the accumulation of these payments must go on to increase very fast for several years, in order at a distant period to be sufficient to discharge the sums which will become due on the extinction of those lives; and that the person who should consider the whole, or even the greatest part of this accumulation as so much profit, would find himself fatally deceived at the final close of the accounts."

He gives this case:—Suppose a Society consisting of 1000 members, whose mean age is 30, were to assure no life for a longer term than *one year;* in this case it is evident that the amount of the premiums ought to be no more than just sufficient at the end of the year to pay the claims that have taken place during the course of that year. In other words, if each member were to assure the sum of £100, he would be required, according to the present terms of the *Equitable* Society, to pay the sum of £1 13*s.* 3*d.* One thousand such premiums will amount to £1666, and this sum with its interest for the year will be found nearly equal to the whole of the claims at the end of that year. If the term be extended to *four* or *seven* years, the premiums will be a little greater than the claims in the first year, in order that a small surplus may be improved for the greater number of deaths in the following years: since it is well known that life is continually rendered more precarious as it becomes older, and of consequence that a greater proportion of assurances will become claims in the last than in the first year of the term. But if instead of four or seven years the term of the assurance be extended to the whole duration of life, it is plain that the difference between the premiums and claims in the first and next succeeding years must be considerably greater in the latter case than in the former. Thus, if the mean age of the members be supposed, as above, to be 30, the annual premium for each £100, to be continued during the whole of life, will be £2 13*s.* 3*d.* One thousand such premiums will amount to £2,666, or to £1,000 more than if those Assurances were made only for one year. This sum of £1,000, therefore, is the surplus which ought to be laid by in the first year towards paying the claims when they shall hereafter exceed the annual premiums. In the second year the surplus will be a little less. In the following years it will continue to diminish, till in the course of about 30 years (if no new assurances be made) the annual premiums and claims will become equal; and, after this period, it will be necessary for discharging the claims, to have recourse to a part of the accumulated surplus in each year till at the end of about 60 years the remainder of this surplus, together with the premiums which have been paid at the beginning of the year, will be just sufficient to pay the last claim. But if the number of members be always continued at 1,000—that is, if new members be constantly admitted at the age of 30 as the old ones drop off—the surplus will go on to accumulate for more than sixty years before the claims and the premiums become equal.[*] This brings us to a more practical aspect of the question.

The object, or, so to speak, the *necessity* of an accumulated fund, is rendered apparent from a consideration of the precise circumstances of the case. At the commencement of a Life Assurance contract the *present value* of the net premiums expected to be received in respect of the policy will exactly equal the present value of the reversion of the sum assured. But year by year afterwards the value of the future premiums *decreases* (by reason of there being a less number of payments to receive), and the value of the sum assured *increases* (by reason of the shortened expectation of life), so that at the end, say of five years, in an account where no new lives were introduced, the difference would become apparent; ***and to the amount at least of this difference should the Office have added to the amount of its cash investments***; so that taking all the items of account together they would still balance.

This point was explained by Mr. Finlaison to the Select Committee in 1853, to the purport we have just stated:—

> "At any future period, such as for example at the end of seven years, a life that has been previously assured will have attained an advanced age. At that advanced ages the premium which the party is paying will assure a certain amount of money in part of the sum originally contemplated, because the life annuity payable, which is called the premium, is an equivalent for so much of the present value of the benefit that is forthcoming. Then there is a portion of the account assured that the premium at the advanced age will not assure, which has to be got out of capital at a rate of interest involved in the premium, and in the present value. That portion which is so deficient is expected to be met by the funds which the Company possesses for the time being."

Which being "freely translated" out of actuarial into popular language means this: that the difference between the premium a man pays who assures at 30, and the premium which would be required of him if he assured at 37, must be saved out of the premiums paid during the intervening seven years: so that at the period of valuation the Office may have from the two sources—(1) the future premiums and (2) the accumulated stock—the values necessary to balance the increased value of the sum to be paid at death. As this difference is easily ascertainable, it is by no means difficult to predict what the accumulated fund should amount to in relation to any given number of assurances.

In illustration of the principle laid down by Mr. Morgan, and the propositions just stated, Dr. Farr laid before the Select Committee of 1853 the following Table. It shows that for the first 35 years *the premiums alone* should be more than sufficient to meet the claims, but that after that period the operation becomes reversed; and the claims become much greater than the income, requiring accumulated funds or capital to supply the deficiency.

[*] Address to the Court of the *Equitable* Society, 7th March, 1793.

It is assumed in this Table that 291 persons enter the Society *every year* at the age of 35, and for equal annual premiums of £10 insure £425. The progress would be as follows:—

	Annual Income.	Payments on death.	Excess of Income from Premiums alone.	Stock.
Starting	£2.910	....	£2,910	£2,910
End of 1 year.........	5,790	£1,275	4,515	7,512
„ 10 years	30,200	14,484	15,716	119,960
„ 20 „	53,640	32,302	20,838	380,958
„ 30 „	72,100	57,510	14,590	730,918
			Deficiency of Income, etc.	
„ 40 „	83,530	90,312	6,782	1,031,077
„ 50 „	87,750	116.298	28,548	1,167,276
„ 60 „	88,330	123,540	35,210	1,189.700
Ultimate state	88,340	123,670	35,330	1,177,667

Dr. Farr says —

"The Table may be read thus: a Society so constituted would in the 30th year receive £72,100 in premiums, pay £57,510 on deaths; it should have £730,918 under investment. In the 50th year the annual premiums (£87,750) would be exceeded by the payments on deaths (£116,298) to the extent of 28,548, which would be more than balanced by the interest of the Stock, £1,167,276 invested at 3 per cent interest. The issuing of 281 policies per annum for an average amount of £425, would not be considered a large business. No deduction is made for management expenses, none having been provided for in the example.

The conditions upon which the preceding Table is founded, like those of some of the preceding illustrations, is one which we have already explained as impossible to realize in practice, viz., that a fixed number of members enter the Society each year, all of one given age. Hence their practical value becomes lessened, and we have to resort to other means and tests. If, indeed, the system of "Maximum Offices," suggested some few months since by the Editor of the *Post Magazine*, was carried into practice, there might in time be some near approximations to the tabulated results just given. This, however, we have to wait for. In the meanwhile we turn to other estimates which have been devised.

The Select Committee appeared to take some pains to discover the existence of any rule or principle of approximating the proportion the funds in hand should bear to the premiums received on all existing assurances, and were not unsuccessful in their object. The following is the question put to Mr. J. J. Downes, and his answer *in extenso*:—

"Have you arrived at any general computation that would show what proportion the existing amount of accumulated stock of the Company would bear to its gross liabilities at any particular moment?"—"Yes; I found that as far as our experience goes, that is, for 30 years, without reference to rate of interest or any rate of mortality or margin, the value of the entire liability on the existing assurances is about one half the amount of the premiums received on those assurances, therefore I say on a general principle that if we have 50 per cent. of the premiums which have been received on the existing business, what has been received on those which have gone off has been spent in claims and expenses. If we say we have issued 100 policies, for instance, and we have got 20 of them left, if we have received on the 20 policies that are left, say £100, and we have more than £50 in hand, we are quite safe, and all we have more than £50 may be considered as profit. There is another point with respect to that: an Office that has already declared bonuses will have made additions to its policies, and therefore it should have capital in hand to meet the bonuses, and as a general view (I do not say it would be exact) it would enable you to form a correct estimate as to the amount of the liability. I should say for every £100 addition to a policy you should have as much per cent. as is equal to the age of the assured. Suppose, for instance a man of 50 has had £100 addition to his policy, the Office should have £50 in hand to meet that claim, and if his age is 60, it should have £60. (Answer No. 1132.)"

Date of 1st Division of Profits.	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
	Manchester Prov...	Mixed	Four-fifths..				By Addition, reduction, or endowment assurance	
1859	*Marine & Gen. Mut.*	Mutu.	Whole	Every 5 yrs.	Policies 3 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1869
	Metropolitan	Mutu.	Whole	Annually ...	Policies 5 yrs. old	Per centage on prems. paid	„ Reduction of premium only	
1862	*Midland Counties..*	Mixed	Four-fifths..	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1872
	Mutual	Mutu.	Whole	Annually ...	Policies 2 yrs. old	Per centage on sums assured	„ Addition, and, after 8 years, reduction	
	Mut. Prov. Alliance	Mutu.						
1868	*Nationl. Assurance of Ireland.........*	Mixed	Two-thirds..	Every 5 yrs.	Policies 3 yrs. old		„ Addition, reduction, or cash	1868
1871	*National Guardian*	Mixed	Four-fifths..	Every 3 yrs.	Participat^{ns}-pols.		„ Addition, reduction, or cash	1871
	Nat. Life Society...	Mutu.	Whole	Annually ...	Members of 5 yrs. and upwards...		„ Bonus, or reduction of premium	
1842	*National Provident*	Mutu.	Whole	Every 5 yrs.	Participat^{ns}-pols.	Per centage on prems. paid	„ Addition or reduction	1867
1866	*National Union* ...	Mixed	Four-fifths..	Every 3 yrs.				1869
1830	*North British and Mercantile*	Mixed	Nine-tenths.	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1872
1846	*Northern*	Mixed	Nine-tenths.	Every 5 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Reduction or cash	
1816	*Norwich Union* ...	Mutu.	Less reserve [fund	Every 5 yrs.	Policies 1 yr. old	Per centage on prems. paid	„ Addition, reduction, or cash	1872
1846	*Nottinghamshire & Derbyshire*	Mixed	One-third ...	Every 7 yrs.	Policies 4 yrs. old		„ Addition or reduction	1872
	Patriotic	Mixed	Two-thirds..				„ Addition, reduction, or cash	
1848	*Pelican*	Mixed	Four-fifths..	Every 7 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1868
1871	*Planet*	Mixed	Nine-tenths.	Every 5 yrs.	Participat^{ns}-pols.	Per centage on sums assured	„ Addition, reduction, or cash	1871
1860	*Provincial*............	Mixed	Four-fifths..		Policies 3 yrs. old		„ Addition, reduction, or cash	1870
1869	*Provincial Union..*	Mixed	Four-fifths..	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1869
1813	*Provident*	Mixed	20-21st parts	Every 7 yrs.	Policies 5 yrs. old	Per centage on prems. paid	„ Cash or reduction	1869
1847	*Provident Clerks'..*	Mutu.	Whole	Every 5 yrs.	Policies 3 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1870
1861	*Prudential*	Mixed	Four-fifths..	Every 5 yrs.	All policies	Per centage on prems. paid	„ Addition or reduction	1871
1863	*Queen*.........	Mixed	Three-frths..	Every 5 yrs.	Participat^{ns}-pols.	Per centage on sums assured	„ Addition, reduction, cash, or free policy	1868
1847	*Reliance*	Mutu.	Whole	Every 3 yrs.	Policies 2 yrs. old	In proportion to surplus premiums paid	„ Addition or reduction	1867
1854	*Royal*	Mixed	Two-thirds..	Every 5 yrs.	Policies 2 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1869
1848	*Roy. Exch. Assrnce.*	Mixed	Two-thirds..	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition or reduction	1871

Date of 1st Division of Profits	Name of Office.	Principle.	What proportion divided.	How often divided.	Amongst whom.	Principle of Division.	How applied.	Date of next Division.
1848	***Royal Farmers'*** ...	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	By Addition	
1819	***Rock***	Mixed	Two-thirds. .	Every 7 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1868
1869	***Sceptre***	Mixed	Four-fifths. .				„ Addition, reduction, or endowment assurance	1869
1833	***Scottish Amicable***..	Mutu.	Whole	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1872
1841	***Scottish Equitable***.	Mutu.	Whole	Every 3 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition or reduction	
1870	***Scottish Imperial***..	Mixed	Nine-tenths.	Every 5 yrs.		Per centage on sums assured	„ Addition, reduction, cash or endowment assurance	
1851	***Scottish National***. .	Mixed	Nine-tenths.	Every 4 yrs.	Policies 4 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1868
1841	*Scottish Provincial*	Mixed	Not fixed ...	Every 5 yrs.	All policies	Per centage on sums assured	„ Addition, reduction, or cash	
1853	*Scottish Provident*.	Mutu.	*Special Scheme.—No Profits until Premiums improved at Interest amount to Sum assured in Policy.*					
1825	*Scot. Widows' Fund*	Mutu.	Whole	Every 7 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1873
1842	*Scottish Union*......	Mixed	Five-sixths. .	Every 5 yrs.	Participatng-pols.	Per centage on prems. paid	„ Addition, reduction, or cash	1871
1852	*Sovereign*	Mixed	Three-frths.	Every 6 yrs.	Participatng-pols.	Per centage on prems. paid	„ Addition, reduction, cash, or endowment assurance..	1868
1835	***Standard***	Mixed	Not fixed ...	Every 5 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1870
1848	***Star***	Mixed	Nine-tenths.	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Addition or reduction	1869
1837	***Sun***....................	Mixed	Four-fifths. .	Every 5 yrs.	Policies 3 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1868
	Union	Mixed	Four-fifths. .	Every 5 yrs.	All assurers	Per centage on sums assured	„ Addition, reduction, or cash	1868
	United Eng. & Scot.	Mixed	Four-fifths. .	Every 5 yrs.				
1856	*United King. Temp.*	Mutu.	Whole	Every 5 yrs.	All assurers	Per centage on prems. paid	„ Addition or reduction	
1846	*Universal*	Mixed	Three-frths..	Annually ...	Policies 6 yrs. old		„ Addition or reduction	
1830	*University*...........	Mixed	Nine-tenths.	Every 5 yrs.	Policies 5 yrs. old	Per centage on sums assured	„ Addition, reduction, or cash	1869
	Victoria (Benefit).	Mutu.	Whole	Every 5 yrs.	Participating policies	Per centage on prems. paid	„ Addition, reduction, cash, or endowment assurance.	
	Wesleyan & Gen...	Frndly.	Whole					
1812	*West of England*...	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Proportion of profits on each policy	„ Addition, reduction, or cash	1869
1866	*Western Counties and London*	Mutu.	Whole	Every 3 yrs.	Policies 2 yrs. old	Per centage on sums assured	„ Addition, reduction, or endowment assurance	1869
1842	*Westminster & Gen.*	Mixed	Four-fifths. .	Every 5 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition, reduction, or cash	1867
	Whittington	Mixed	Four-fifths. .	Every 3 yrs.	Policies 2 yrs. old	Per centage on prems. paid	„ Addition or reduction	
1860	*Yorkshire*	Mixed	Four-fifths. .	Every 5 yrs.			„ Addition or reduction	1870

Several of the terms employed as headings to the columns of the preceding Table appear to require some explanation. The term "Stock," column 11, is one of these. The sums in this column represent the proportion of the proceeds of the former columns, which should be held intact to meet, with accumulations, the sums assured as shown in column 12. If circumstances prove favourable—as, for instance, if the rate of interest realized exceeded, on an average of years, 3 per cent.—(the rate adopted in the Table)—or if the mortality was more favourable than that anticipated by the Table (English Table No. 2) then the sums actually in possession of the Office would exceed those stated in column 11—but under *no circumstances ought they ever to be less!* If there be any surplus from the sources indicated, or otherwise, it will be applied according to the constitution of the Office. If a *Proprietary* one to the proprietors; if a *Mutual* one to the assured, or for a reserve fund. If a *Mixed* Office the chief part to the assured, the remainder to the shareholders.

The following explanation by Dr. Farr applies to the preceding Tables:—

> "The accounts of a Life Office, to be intelligible, must be divided into two distinct branches; they must be viewed as consisting of two distinct funds; for its property consists (1) of adequate securities to pay in money the sums which it should have in deposit to the account of each policy; (2) of adequate securities in the form of reserve, or rest, or guarantee fund, to enable it to establish its existence, to carry on its business, and to fulfil its engagements with certainty. For the sake of distinction the first fund might be called 'stock,' the second 'capital.' The value of the *stock* which should stand to the account of each policy, is the accumulated amount of the excess of the invariable premiums, over the precise premiums which cover the risks up to the date of valuation; it is equal to the present value of the sum assured, *minus* the present value of the future net premiums. . . . . ." Examples may be given. "Thus if C, of the age of 25, pays an annual premium of £130, his life is insured for £5,590, and at the end of ten years, after he has paid £1,300, the Society should have £598 to his account as the surplus of the ten net premiums of £100 received, and required with the future net premiums to insure the payment of £5,590 at his death. . . . The *sum* of the several amounts in deposit to the account of each insured life is the 'stock' of the Insurance Society; which is solvent if it possesses an equivalent value in good securities."

But in a Society constituted in accordance with the supposition of these tables, and properly managed, there will be a surplus—and a large one—not from the sources already indicated, but from the *loading of the premiums.* The sums stated in column 5 are the net premiums only, and of themselves are sufficient to meet all expected claims. But these premiums are, in practice, subject to a loading of 20 per cent. The proceeds from this loading are set forth in column 13, and in the next column is stated the sums which at each stage of the Society's progress may be held as sufficient for all proper charges of management. As our abstract is arranged, after the first ten years, in quinquennial periods, we require a supplementary table to show the surplus arising from this source, and we have it.

As life premiums are payable in advance, the preceding table begins with 0, to indicate the operations of the first year. Down to the end of the sixth year, or seventh annual premium, the loading received would not meet the estimated expenses of management; indeed, at that period, the management account would stand thus:—Received, £15,948; expended, £32,000; difference, £16,052. This fully illustrates the necessity for subscribed capital, or a guarantee fund, to meet the crisis of these early years, if it be intended, as it ought to be in all Societies, to keep the "stock" intact. But by about the 16th year the loading has wiped off all the arrears of the earlier years, as well as the current expenses; and henceforward a considerable addition should be made to the funds of the Society from this source. Here is the table:—

						Total Expenditure.	Excess.
Total receipts from loading	during	the first	5	years	£8,608	£24,000	£15,392
Do.	"	"	10	"	30,956	44,000	13,044
Do.	"	"	15	"	66,136	69,000	2,864
							Reverse.
Do.	"	"	20	"	113,132	104,000	9,132*
Do.	"	"	25	"	170,882	139,000	31,882
Do.	"	"	30	"	238,208	176,000	62,208
Do.	"	"	35	"	312,952	214,000	98,952
Do.	"	"	40	"	393,794	253,750	140,044
Do.	"	"	45	"	478,594	291,500	187,094
Do.	"	"	50	"	565,624	331,500	234,126
Do.	"	"	55	"	653,610	371,500	282,110
Do.	"	"	60	"	741,886	411,500	3: 0,886
Do.	"	"	63	"	812,554	451.500	361,054

This brings us to a point which we have been steadily approaching, and one which it is desirable properly to understand, viz., that assuming, as we are fairly entitled to do, that the Mortality Table will, where proper selection has been exercised, provide for all claims by death, and the interest realized upon the funds, over and above that assumed in the calculations, will provide for all losses or investments—there will still remain in all well-constituted and well-managed Offices, a considerable surplus, after paying all proper expenses, out of the *loading of the premiums.*

We have already pointed out the reasons which would operate against any direct comparison between the table last given and the financial progress of any existing Office: the table is calculated with all the uniformity which theory can command, and particularly with respect to the number of lives admitted, their ages, and the sums assured: while in an existing Assurance Office, these are all fluctuating and uncertain elements. The sole object of the introduction of the table into this work, then, is not for the purpose of instituting comparisons between it and individual Offices, but that the reader should possess a correct notion of the growth of the funds of an Assurance Office. For the first 38 years of the existence of an Office, the income should be expected to exceed the outgo; the reverse then takes places; and the excess of funds, or the "stock" accumulated during this period, must not be either divided or expended, but carefully accumulated for the period subsequent to the first 38 years when the outgo becoming greater than the annual income, it will require such an accumulated fund to fall back upon, in order to maintain a state of solvency. The reader may now understand the truth of a remark made some time since, that every Society may be considered young which has not existed some *forty* or

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* The excess is now reversed in favour of the Society, and so continues.

fifty years. It is then that the crisis of its fate is pending; it is then that the prudence of its former management will be put to the severest test.

We dwell upon this point the more earnestly from a knowledge of the liability to misconception which *must exist* in the popular mind. The fact of large accumulated funds, or a large annual income and a small annual outgo, are looked upon as unfailing signs of prosperity. How few understand the proportion which these items *must* bear to each other if the Office is to succeed, or how long an Office must go on accumulating funds, in order to meet engagements which in the end are as certain as the return of the seasons, or as the succession of darkness after daylight! Comparatively few writers appear to us to have urged this point with sufficient stress. Those who have, deserve to be brought prominently forward. An able writer in *Tait's Magazine* some few years since thus put the case:—

> "The necessity of all these Companies and Societies not regarding the contributions of new members in the light of increased property, but calculating strictly and periodically, whether, if their roll were closed and sealed against all candidates, they could discharge responsibilities, and leave a balance, is apparent. An Institution that could not accomplish that object, *is insolvent*. It may recover, but the probabilities are against it. Friendly Societies were incompetent to conduct these investigations. Life Assurance Societies have the means, and their Managers can only culpably neglect them. The best rule in estimating their state is to count for nothing the probable influx of new members. They should see the practical conclusion *that every man brings his own burden, and carry it out in their accountings*."

This writer leads us away from the point immediately before us to one of sufficient importance in the finance of Life Asssurance to merit some special notice. It is this—whether in an Office which, after a series of years, is found deficient in the necesary amount of accumulated funds, the *admission of young lives* is likely materially to improve its financial aspects. If the theory that every man brings his own burden be literally applied, such a notion is erroneous, and this appears to be the view of the great majority of writers who have touched upon the point. In addition to the preceding writer, here is Mr. Charles Ansell:—

> "The mere fact of young lives coming in would not improve a bad account, because they would bring their responsibilities with them. *Each assurance which comes brings* its responsibilities with it, and does not necessarily improve an account that is bad."

Mr. Neison, as the exponent of the views of another class of Actuaries says, almost in the same words:—

> "As to the effect of introducing new assurances it is, on the face of it, evident that the introduction of new assurances would *not* help bad business which might have befallen to the Company, with regard to its prior assurances, because the new assurances would bring with them new liabilities. They might increase the money in the coffers, *but the Company might be no better off*."

The moral, therefore, is still the same, whichever way we turn. There is no permanent patching up of an unsound Assurance Office. Numbers are, no doubt, essential for the purpose of obtaining a correct average; but their value has a preservative rather than a restorative tendency. Mr. Morgan touched the key-note to prosperity when, at the conclusion of one of his master-pieces, he said, "I must *also* add, that in all the circumstances of the Society, *the preservation* *of its capital sacred and inviolate*, is indispensable;" meaning thereby such portion of the capital or accumulated fund as actuarial investigation did not show to be actual surplus.

A knowledge that an accumulated and accumulating fund is necessary to the solvency of an Office, while it makes us cautious on the one hand, may render us open to deception on the other. We know that the accumulated fund should, at its minimum, be equal to the difference between the value of the premiums, and the value of sums assured; and we know something of the way in which these respective values are, or ought to be, ascertained, but dishonest practices have crept in.

A trader may practice deception upon his creditors in either of two ways. 1. By over-valuing his stock, and under-valuing his liabilities. 2. By valuing his stock fairly, but leaving his liabilities altogether out of the account. A Life Office can perpetrate similar malpractices. The processes may be divided under two heads.

First.—By employing in the valuation a Life Table showing a longer duration of life than that on which the operations of the Society were originally based; or by assuming a higher rate of interest than was originally contemplated—the former discrepancy *deferring the period of the expected claims, and, at the same time, increasing the number of annual premiums expected to be received*; the latter showing a more rapid accumulation of funds than had been contemplated.

Secondly, and more generally, by valuing the future premiums at their *gross* instead of their *net* value; by which means, all the loading, or charge of management and contingencies, is made to appear as an asset; thus swelling out the apparent resources of the Office without making any provision for a very large item of its future liabilities!

With respect to the methods first named, the evil results may be either large or small, varying with the circumstances. If the new Mortality Table adopted be a correct one, and the new rate of interest assumed be justified by circumstances, the change may be even beneficial; although the former members, by having paid the higher rates deduced from the original table, will be placed in a very disadvantageous position with respect to persons newly assuring, unless some special scheme of appropriating the surplus be devised, as in the case of the *Equitable* Society. But where such a step is taken simply as a blind to extravagant expenditure or unsuccessful management, *then* it will assume a very serious aspect, and also a very prejudicial one.

Any change, therefore, in the Mortality Table used by an Office may be looked upon as a very suspicious circumstance; and no system of revision or audit of Assurance Offices could hope to be ever, in the remotest degree, successful, if especial attention were not paid to this point.

The second method referred to is of sufficient importance to be considered under a separate chapter.

CHAPTER VI.

ON THE EXCLUSION OR OTHERWISE OF THE "LOADING" FROM VALUATIONS.

The considerations involved in this chapter are of the greatest moment in relation to the finance of Life Assurance, and the proper conduct of Assurance Offices.

The fact is too patent that many of the glowing valuations which have, during the last few years, been announced in connection with Companies proverbial for nothing but their recklessness of expenditure, and total disregard of all known rules for conducting life business, have been produced entirely by the disreputable process of including the "charge" on one side of the account without placing the liabilities it implies on the other side. By such means Offices hopelessly insolvent may be placed in the imaginary possession of almost fabulous wealth; with surpluses exceeding the entire premium income of the Company during the whole period of its existence!

On few points, perhaps, are Actuaries more fully agreed than upon the entire exclusion of the loading from valuations. Their objections, however, appear rather to be based on the abuse of the system, than upon any calm and deliberate consideration of its intrinsic defects or advantages. Nor is this much to be wondered at. The extent to which this method has been abused of late is sufficient to surround it with the most unmitigated mistrust, Yet we venture to think, and shall endeavour to show, that the principle of including the loading has within itself the most effectual means of checking the abuses which have hitherto characterized it; that, indeed, like many other principles, it is as powerful for good as for evil, the evil however at *present* predominating.

Let us, however, drop this mysterious mood, and proceed to deal with the point. First, then, for the dark side.

We have again to return to the fact that a life premium is made up of two parts: one to meet the risk of death, the other for expenses and contingencies. The requirements which will be made in respect of the first part of the premium are capable of being determined with strict mathematical precision: the requirements for expenses and contingencies cannot be so accurately determined. In a valuation for bonus the present value of the sums assured are set off against the present value of the premiums payable; but the question of future expenses does not enter into the account, for the reason that it would have the effect of introducing unknown against known values, and would therefore rather prevent the accuracy desired than assist in securing it.

If then the liabilities in respect of the "loading" cannot be determined, and therefore cannot be charged in the debit side of the account, the only effect of introducing the value of loading as an asset is to understate the liabilities, and to overstate the assets, lending an artificial aspect of prosperity which even if not acted upon in the division of surplus, tends to mislead; or if acted upon necessarily to impoverish the funds of the Society. Mr. Sang takes up the argument at this point, He says:—

> "Let us keep this steadily in view, and we shall at once see that by setting the present value of the premiums due by the members against the present value of the sums assured to them, we estimate as present profit all that is yet to be realized during the currency of their policies; and that a balance so struck does *not exhibit the present state of the Society's affairs*, but the whole profits prospectively to accrue from its current transactions. If then the free fund [surplus] so brought out be set out and distributed in any way, *there will be left no prospect of further profit from the transactions of the present members, who are then put in the same position as if they paid only net-value premiums. Were no new members to enter the Society, no further bonus could ever be declared; and hence, if the present be to share with the new ones in any future profit, that must go to deprive the new comers of any part of the surplus payments.* If valuations on this principle be accurately conducted, the *new entrants* ought to divide *exclusively* the whole of any future bonus." And he adds, "It behoves, then, a person proposing to assure with such a Society, to enquire carefully as to the manner in which the valuation is conducted, since a very slight variation in that may seriously affect the interest of those whom he proposes to benefit by his transaction; and he ought to look to this still more narrowly, if the present members be to share in the future profits, not merely in proportion to the sums originally assured to them, but in proportion to the previously declared bonus additions."

If an Office proceeds to a distribution of such imaginary or prospective profits, it requires no great penetration to discern that a great injustice must be inflicted on the future members. It was the contemplation of such an occurrence as this that led the author of *Life Assurance, its Schemes, etc.*, to exclaim, "possibly the representatives of those few members who were *so fortunate as to die* during this halcyon period would reap the advantage of the unworthy trick which had been played:—

'If 'twere then to die, 'twere then to be most happy.'

while, on the other hand, the representatives of those members who might *unfortunately live* some few years longer (thus contributing more largely to the Society's funds) might consider themselves fortunate if they obtained from the wreck even the bare amount originally assured."

But leaving altogether out of the question the injustice likely to result to the members from the "one-sided" mode of proceeding referred to, let us view it simply in relation to the correct principles of preparing a statement of assets and liabilities. It is the business of an actuary to reduce all fluctuating elements down to, and within the rules of *average*, or in other words of certainty. If he errs it should be on the safe side. Hence we hear of "corrections for fluctuations," and "adjustments," without end: and they are known, in most cases, to be necessary. But where are the adjustments and corrections when the whole of the prospective profits are brought into the account as present assets? The actuary who so prepares a valuation, knows full well that, while he is anticipating the profits upon all the existing policies up to the full extent of their possible currency, not more than one-half such policies will run on to maturity. We have already referred to the small proportion of the *Equitable* policies which were continued long enough in existence to become claims. But as this may be considered, and is, to some extent, an exceptional case, we will refer to a more modern instance.

Let us take the first 500 policies issued by the *Economic* Office, and see what had become of them at the end of 30 years; here are the figures:—

Dead	149
Purchased by the Office	118
Lapsed	86
Term expired	28
In existence	119
	500

Now, assuming that all the 119 existing policies became claims by death—a circumstance not very probable, seeing that of the 381 ceasing to exist in that period only 149 were discontinued by death—assuming, we say, this to be the case, only 268, or just over one-half of the entire number observed upon, will have emerged by death. "so that by taking credit for an annuity equal to the margin of the premiums *for the whole of the life* you take more than can possibly be realized."* These figures, it must be remembered, apply to an Office of the highest standing: in many Offices "want of confidence," it may be presumed, would add considerably to the lapsed and surrendered policies. It may be useful to note, that of the above policies, those which were determined by death existed on an average for fourteen years; those extinguished by purchase nine years; those which lapsed, three years; and the "term" assurances five years.

The process of valuation now under notice assumes that *all* the policies will be determined by death: whereas, certainly not more than one-half of the entire number issued in any Office, speaking according to modern as well as earlier experience, will be so terminated.

An instance of the results which *can* be produced by such a process of false valuation may be useful. The value of the reversion of £ 1,000,000 on the lives of persons aged 30, is £ 446,750. The net annual premiums to assure £1,000,000 on the same lives is £23.519 Assume that the premiums which the insurers have engaged to pay are "charged" to the extent of 25 per cent., and amount to £29.399, then *the present value of these annual premiums is* £ 558,437. Allowing no deduction for expenses, the profits of the Office, which had granted the policies, are, *by the said method*, £ 111,687, although it has received as actual premiums only £ 29,399 !† We do not want to say more.

After this illustration we shall not have much difficulty in acknowledging, that "in these valuations very great fallacies may sometimes lurk."

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* *Vide* evidence of Mr. J. J. Downes, before Select Committee, question 1106.

† *Vide* English Life Table, No. 2, and Dr. Farr's Letter in his twelfth Annual Report of Registrar-General.

That we are not dealing with an imaginary evil the following testimony will exemplify.

In answer to the question, "Do you suppose that many Offices have divided bonuses upon a principle which the actuaries of other Offices would think unsafe?" Mr. J. J. Downes thus replied:—

> "I have seen it stated in published reports, that a clear divisable surplus of so much remains, but I infer from the practice of the Office that they do not believe that to be the fact, because they state a divisable surplus to a large amount, and recommend a division to a smaller amount. Now, if the Office has an actual surplus, and declares it to be a surplus, they may safely divide it unless they give very good reasons for withholding a portion of it. *If they give a sufficient reason for withholding a portion of such surplus, then I say in their judgment such a surplus does not exist, and ought not to be stated.*"

The reader will at once perceive the force of this reasoning. All the circumstances of an Office being known to the actuary before or during the progress of valuation, or any result which cannot be acted upon is merely fictitious and delusive. Applying the preceding remarks to his own Office (the *Economic*), Mr. Downes continues—

> "If I were to make a valuation on that principle (valuing the gross premiums) I should show a surplus exceeding half a million of money in the hands of our Society, beyond the surplus actually realised; and if I were to say 'There is half a million of money profit,' the members would say 'Let us divide it; if you have that surplus what reason have you for not dividing it?' 'Why it is a surplus that *may come*; supposing that you were in a condition to commute your premiums for the whole term of life into present assets, and to put the amount to your credit in the account, *then* we would have the further surplus of half a million to divide; *but until it is brought there such a surplus does not exist.*'"*

The following writers all speak strongly upon the practice of placing the value of the gross premiums on one side of the account, with no corresponding deductions for the purposes of expenses and contingencies. On this point, indeed, there seems no two opinions:—

Mr. Charles Ansell points out that (as shewn in the illustration just given) it is optional with those who make the assurances to continue their premiums or not as they may think fit, adding:—"And in the meantime you have estimated the profit attributable to each premium as an element of your financial or pecuniary position, and assume that the Institution will certainly receive it until the time the life shall die, *and the party should drop the policy, than you lose a portion of that which you have set down as profit*, and it is not really available, although you have assumed it to be so."

Mr. J. J. Downes expresses similar views almost in the same words. When interrogated, "In what way would you value the future premiums payable to the Office as assets for existing liabilities; would you take the gross amount payable, or a portion of it?" He replied, "I should take only that portion of it supposed to be applicable to the risk, leaving a margin to pay future expenses." And, again: "Then you would not take credit in your balance-sheet for the whole amount of premiums payable to the Office?" His reply being, "No, *that would be very erroneous, because the whole amount payable under the contracts* may never be received; you are not sure of any portion of it beyond that which you have already received." He afterwards supports this view by the following case. "Say I received from A B £40, £10 of which is supposed to be profit for expenses; the whole is worth 15 years' purchase, and 15 years' purchase of the £10 per annum for expenses is worth £150: the policy at the end of the year, on the principle I have given, is worth half the premium which has been paid, say £20 on the one side, then I have £20 of liability on the other, and for £150 of profit I lose my liability of £20 on the other side. I am relieved from that, but I gain a loss of £150 on the other; the Society would therefore be by £130 in worse position than it was before the lapse of the policy, on such an estimate of its position."

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* Question 1,123.

Mr. Higham again follows on the same side. Speaking of valuing the gross premiums he says, "The sum assured is valued and put on one side of the account: the claim of the Company to receive premiums is valued and put on the other side of the account, and the latter is made out to be larger than the former: consequently, as I said before, a policy which the Company would pay money to cancel, appears in their balance-sheet as a valuable asset; that is to say, the same document is a valuable property to the grantor and grantee." He also calls an example to his aid:—"Allow me to suppose the case of a Bank making up its accounts: it owes to its depositors £1,000,000. It has in hand £900,000; it puts down an additional item of assets, profits, we will say at the rate of £10,000 a-year, valued at 20 years purchase: by that means it makes its assets £1,100,000 against £1,000,000 of liabilities, and the result is stated to be a surplus of £100,000. *That principle would never be adopted in a Bank, and I think it ought not to be adopted in an Assurance Company.*"

Mr. W. T. Thomson takes up the matter in rather a different light. "I object (he says) very decidedly to the valuation and exhibition in the balance-sheet, of the difference between the net and gross premiums, I think the Actuary of each Office should know precisely what the value of the difference is; but I object to its being shown or introduced in the balance-sheet, *as calculated to mislead, and to induce policy-holders, Directors, and others* to press for its division, or partial division, while it should be reserved entire."

Mr. S. Ingall is still stronger upon the point. "In my opinion, next to an improvident expenditure, it is the most dangerous practice that can be resorted to in an Assurance Company; and is generally adopted in Offices where there is a deficiency of assets."

Mr. T. R. Edmunds mildly says, while speaking of the correct principles of valuation, "The additions to the premiums are disregarded: the net premiums alone are valued."

An able writer in the *Assurance Magazine* says the loading "will clearly be required in every year to come, as much as in those which have passed, and therefore must be carefully set aside for the purposes in question."

Dr. Farr does not enter very fully into the discussion. He says, "It is urged by one class of actuaries, that the 'charge' should not be brought into account; and what I have said hitherto is in accordance with that view."

Mr. Sang again says, "Now, were we to proceed incautiously, and estimate the present value of the gross premiums due, it is quite clear that we would be *accounting as present property, the value of a fund yet to be realised.* To avoid including this in our estimate, we must take *not the gross premium*, but the *net premium that would have resulted from the best known law of mortality.*"

Mr. Percy M. Dove, in publishing the results of a valuation in his Office, took the precaution, and we think wisely as the times go, of announcing as follows: "The future premiums in existing policies have not been computed at the full amount payable by the assured, but at the lesser amount found by deducting from each the '*loading*' or addition made for expenses and profit. By this method the sources of profits are entirely disunited from consideration in the demonstrations, and we deal solely and exclusively with the profit made within the period of investigation." Other Managers will do well to follow this example.

Now, after all that has been said against the introduction of the loading into valuations, it may be startling for us to assert that no valuation can ever be considered complete which does not include the value of the loading. Yet such is really the case, with, however, this important provisio, that it should appear *on both sides of the account.*"

We are not claiming credit for originating this view of the case. It has long since had its able supporters, and amongst these, actuaries who, by reason of the position they occupy, may be ranked at the head of their profession. The editors of the *Assurance Magazine* (vol. iii., p. 292–3) put this unanswerable case:—

> "Let us suppose a Company to be in the receipt of an income from premiums of £100,000 per annum, and that its business was commenced with rates supposed to be equal in every case to the risk, a marginal addition [loading] of 25 per cent. being made to them throughout. The portion of income required in such case *for the sums assured merely* would hence be £80,000, and the remaining £20,000 per annum *would be the provision for extra contingencies.* Let us now imagine (they continue) an investigation to be made as to the real rate of mortality prevailing, and that it *be found that in lieu of the rate originally assured being borne out, a certain increased one is proved to obtain, the premiums based upon which would make it necessary to devote £90,000 instead of £80,000 per annum to meet the risks;* the surplus income being thus reduced to £10,000 per annum only, instead of £20,000. Now as the 'change in the rate of premium consequent upon that in the rate of mortality, is *not immediately apparent*, this reduction in the surplus income is *not unlikely to escape observation, where the net premiums alone are valued*, and matters in this way might be allowed to go on as if no such reduction had taken place—a *state* of things impossible to be where the same, or nearly the same, proportion of the value of the net premiums is always retained. In short, it cannot be too carefully borne in mind that the only means we have in this business of judging as to the future must be derived from a vigilant observation of what has taken place in circumstances as nearly as possible of a similar character; and that thus it behoves us to make, from time to time, investigations with this object, and to effect such changes *in the provision for future liabilities as may thereupon be found necessary.* . . . . We thus virtually exercise a power of raising or depressing the future premiums, as the necessities of the case may demand, or what is the same thing, we *increase or diminish the returns of surplus* in obedience to the dictates of our experience, and in accordance with the law which regulates it; fulfilling in this way, and obviously in the proper manner, the very objects with which the marginal additions were originally made."

We most entirely agree with all the authorities quoted in depre cating the system of valuing the *gross premiums* as a set off against the *net liabilities*. No writer, so far as we are aware, has ever justified such a course, although it has been too frequently acted upon. The point we urge is that a sum so important for good or evil as the value of the loading, should not be left entirely out of the account.

So far, indeed, from this plan being objectionable on the score of abuses, we believe the very opposite effect would be produced. The introducing of this item into the account would be a means of testing whether it had already been trespassed upon in the present or any previous valuations. Mr. Jellicoe thinks it "quite right to take the value of the gross premiums, and to deduct from them a portion for the purpose of forming from that a guarantee or surplus fund," which he afterwards designates "a contrivance to preserve the same margin nearly, whatever the fluctuation in the risk of premium may be"—as, in fact, detailed in the plan laid down by the editors of the *Assurance Magazine*, of whom he is one, and so far we go entirely with him.

There is another strong reason in support of this view. Take the case of two Offices, one charging high rates of premium; the other, low rates—such indeed as might be derived from the English Table No. 2—in the one case the net rates being loaded 40 per cent.: in the other case only *twenty*. Now if the valuation were confined to the net rates only, the position of the two Offices would appear equal (if their businesses had been equal), whereas the actual resources of the high rate Office *must*, under equally sound management, be infinitely greater than those of the low rate one.

Lastly, we may ask, if the loading be not distinctly set forth in the items of valuation, what guarantee is there sufficiently palpable for public guidance, that where it is intended to "make things pleasant," regardless of the after consequences, the loading will not be included on the asset side of the account without the fact being notified?

In the conduct of an actuarial investigation there should be no swerving to the right nor to the left. Here, as Professor de Morgan declares, "it is *truth* and not *security* that is the object." There should be no speculation in such matters: all should conform to the strict laws of certainty. Mr. Morgan set us a noble example in the great *Equitable* Society: we shall do well to follow it. Addressing the members in 1793, he said, "It is, I believe, the only Society that has been uniformly guided in its practice by calculation; and the success and credit which it has attained sufficiently prove the wisdom of this conduct." To which we devoutly say *Amen*.

Mr. E. J. Farren has remarked that "it must be an obvious strain upon the Actuary's firmness to be aware that in making up his accounts for the next valuation, if he does not declare a very large bonus, the business of the Office will fall off;" and, he adds, "A man who does not know thoroughly all about the subject must be in a very awkward position." An Actuary who does not well consider all the points we have noted, and many others which can claim no space in a simply popular treatise, will in all probability, sooner or later, lead any Company he may be connected with into considerable, if not into irretrievable, difficulties.

DIVISION V.

LIFE ASSURANCE AS AN INVESTMENT, INCLUDING THE PURCHASE OF LIFE POLICIES, AND SPECULATIONS IN INSURANCE SHARES.

> "An Insurance Office conducted upon right principles is a species of *Savings' Bank* upon a large scale, with the additional advantage of *absolutely securing*, in case of death, to the representatives or assigns of the assured, that sum to which his annual savings would have amounted at compound interest had he attained to the average duration of life, that is to say, to that age which he would have every reasonable expectation of attaining according to a Table of Mortality founded upon actual experience."—*Life Assurance Offices, New and Speculative.*

THE preceding chapters on bonuses will have prepared our readers to look upon Life Assurance with some regard to its claims as a profitable investment. Their primary object, indeed, has been to consider the sources of profit with regard to its equitable distribution amongst the policy-holders. Still a careful consideration of the points there discussed, would have constituted a desirable introduction to the question we are now approaching. The purpose of the *following* chapters then will be to show that Life Assurance—apart from all other considerations—offers decided *advantages as a means of investment;* a view in support of which we shall adduce abundant testimony.

In order to furnish some more definite idea of the advantageous results which Life Assurance is capable of affording, than is generally conveyed by merely dry statements of facts, we purpose to append to the following chapter some illustrations of the practical working of INTEREST: to which source, as we have already explained, much that at first sight appears unaccountable in matters connected with Investments is traceable. We shall also include in this division a short chapter on the *purchase of life policies,* a point on which more general information is much required; and, finally, a chapter on *Insurance Shares* as a medium of investment.

There is yet one other point to be kept constantly in view, while speaking of Life Assurance in the light of an Investment; and that is the *certainty* of the issue. The uncertainty of human life may constitute a barrier to *all other speculations.* In Life Assurance this is one of the main elements taken into account. On this point Mr. Babbage has well said—

> "The whole object of Assurances is to render *certain* that which nature has made uncertain. A person in health and employment knows that if he lives a few years he will be able to leave at his death a competency for his family; but he knows also that from the uncertainty of life he may be cut off in a year, in a month, and leave his family unprovided for: thus situated he has recourse to an Assurance on his life and he is now *certain* of leaving a provision for his family."

With this view steadily before us we may proceed.

CHAPTER I.

LIFE ASSURANCE AS AN INVESTMENT.

The great Dr. Franklin, amongst the many wise things he said and did, pronounced "a policy of Life Assurance" to be "the *cheapest and safest* mode of making a *certain* provision for one's family." Assuming then that all persons of sound mind and ordinary education *are* desirous of making some provision for those dependent upon them, to guard against their being rendered destitute, or thrown upon the bounty of strangers, we purpose to devote a few pages, in which to demonstrate that Dr. Franklin's view of Life Assurance is the correct one; and also to show, that even those who have no family or friends to provide for, may find in Life Assurance *a safe and profitable means of investment.*

Formerly persons looked upon Life Assurance as a scheme for *taxing their purses, or curtailing their present enjoyments,* without much prospect of any certain or adequate return. If such an assumption were ever true, which we by no means admit, it certainly can lay no claim to variety in the present improved state of the science.

It will not create surprise if we take occasion to remark thus early in the enquiry that, whether the object of the person assuring be the all-important one of making a provision for his family, or whether it be simply with a view to the profitable investment of money, the same sagacity and caution which are employed by business people in ordinary transactions should be brought to bear upon matters of Life Assurance, otherwise disappointment and loss may be the result. Life Assurance indeed being "a contract based upon confidence," the fulfilment of its object extending to remote periods, most frequently terminating only with the chief party to the contract, even more than usual caution should be exercised. Because Life Assurance is in itself good, and its adoption in most instances praiseworthy, it by no means follows, that all the channels to its accomplishment are either good, praiseworthy, or even trustworthy; the contrary is, indeed, too frequently shown to be the case. It must, therefore, be understood that the advantages we are about to explain may only be expected to accrue to those who seek membership in sound and respectable Offices, be they young or old.

To prevent the necessity of entering further upon these points here, a chapter has been prepared under the title of "Guide to the Selection of an Assurance Office," which the reader may consult with advantage before attempting to enter upon Life Assurance as an investment. We will only therefore add, that there are now existing numerous Offices, both old and young, that appear capable of giving all the advantages which we shall lead the reader to expect in the progress of this chapter, while unfortunately also, there are some which should be avoided as we avoid a pestilence or a famine.

It has been the custom with most writers to dwell upon Life Assurance as a great moral duty, or, if they have entered upon its advantages, it has been rather in a national than in an individual light. This we fancy to be, for all practical purposes, a mistake. However much we may deplore the fact, we may still speak of it as a *fact*, that comparatively few people pay much regard to what is simply their duty, unless they have some personal object in view in addition. Acting upon this view in an insurance career extending over some years, we have always endeavoured to show those with whom we came in contact, that it was their *interest* to assure, and we have very rarely missed our mark. It is in accordance with the spirit of the present age, particularly with mercantile people, to ask, "will it PAY?" We hope we may convince our readers, and that they again may convince their friends, that *it will*. So now to our task.

While many of the writers before referred to have failed to take the ground we have now assumed, most of them have expressed views in support of the profitable character of assurance investments, and we are desirous of strengthening our position by some reference to these opinions.

Dr. Farr, who writes upon Life Assurance simply with a view to the improvement of the science, and the rendering of it more generally applicable, says, "Probably if the following question were put to those whose lives are now insured—what is the advantage which you derive from investing your surplus income in an Assurance Office? more than one-half would reply—The *certainty* of my executors receiving a sum at my death, were that to take place to-morrow. This," he adds, "*is but half an answer;* for not only does the Office undertake the equalization of life, as above described, but also *the return of the sums invested with compound interest.*" He then proceeds to the development of the idea which constitutes the argument of the present chapter:—

> "A Life Assurance Office is a bank, in which deposits are made every year, to be withdrawn *at the death of the depositor;* it is a lottery reversed, as for unequal sums it sells equal prizes; it is a trading firm, in some cases seeking customers every year, and always seeking customers; it is a Company of capitalists, constantly looking out for long investments, and well organized, to deal profitably in securities at some greater risk than those returning 3 per cent. interest."
>
> *Vide 12th Report of Registrar-General.*

Professor de Morgan says, no one can form an accurate idea of an Assurance Office "who does not consider it as a Savings Bank yielding interest, and interest upon interest;" adding, "This is a reason why an Office which charges for its insurance more than it is worth, as an insurance, may nevertheless place its contributors in a better position than they would have held if there had been no such Institution."

CHAPTER VI.

ON THE EXCLUSION OR OTHERWISE OF THE "LOADING" FROM VALUATIONS.

The considerations involved in this chapter are of the greatest moment in relation to the finance of Life Assurance, and the proper conduct of Assurance Offices.

The fact is too patent that many of the glowing valuations which have, during the last few years, been announced in connection with Companies proverbial for nothing but their recklessness of expenditure, and total disregard of all known rules for conducting life business, have been produced entirely by the disreputable process of including the "charge" on one side of the account without placing the liabilities it implies on the other side. By such means Offices hopelessly insolvent may be placed in the imaginary possession of almost fabulous wealth; with surpluses exceeding the entire premium income of the Company during the whole period of its existence!

On few points, perhaps, are Actuaries more fully agreed than upon the entire exclusion of the loading from valuations. Their objections, however, appear rather to be based on the abuse of the system, than upon any calm and deliberate consideration of its intrinsic defects or advantages. Nor is this much to be wondered at. The extent to which this method has been abused of late is sufficient to surround it with the most unmitigated mistrust, Yet we venture to think, and shall endeavour to show, that the principle of including the loading has within itself the most effectual means of checking the abuses which have hitherto characterized it; that, indeed, like many other principles, it is as powerful for good as for evil, the evil however at *present* predominating.

Let us, however, drop this mysterious mood, and proceed to deal with the point. First, then, for the dark side.

We have again to return to the fact that a life premium is made up of two parts: one to meet the risk of death, the other for expenses and contingencies. The requirements which will be made in respect of the first part of the premium are capable of being determined with strict mathematical precision: the requirements for expenses and contingencies cannot be so accurately determined. In a valuation for bonus the present value of the sums assured are set off against the present value of the premiums payable; but the question of future expenses does not enter into the account, for the reason that it would have the effect of introducing unknown against known values, and would therefore rather prevent the accuracy desired than assist in securing it.

If then the liabilities in respect of the "loading" cannot be determined, and therefore cannot be charged in the debit side of the account, the only effect of introducing the value of loading as an asset is to understate the liabilities, and to overstate the assets, lending an artificial aspect of prosperity which even if not acted upon in the division of surplus, tends to mislead; or if acted upon necessarily to impoverish the funds of the Society. Mr. Sang takes up the argument at this point, He says:—

> "Let us keep this steadily in view, and we shall at once see that by setting the present value of the premiums due by the members against the present value of the sums assured to them, we estimate as present profit all that is yet to be realized during the currency of their policies; and that a balance so struck does *not exhibit the present state of the Society's affairs*, but the whole profits prospectively to accrue from its current transactions. If then the free fund [surplus] so brought out be set out and distributed in any way, *there will be left no prospect of further profit from the transactions of the present members, who are then put in the same position as if they paid only net-value premiums. Were no new members to enter the Society, no further bonus could ever be declared; and hence, if the present be to share with the new ones in any future profit, that must go to deprive the new comers of any part of the surplus payments.* If valuations on this principle be accurately conducted, the *new entrants* ought to divide *exclusively* the whole of any future bonus." And he adds, "It behoves, then, a person proposing to assure with such a Society, to enquire carefully as to the manner in which the valuation is conducted, since a very slight variation in that may seriously affect the interest of those whom he proposes to benefit by his transaction; and he ought to look to this still more narrowly, if the present members be to share in the future profits, not merely in proportion to the sums originally assured to them, but in proportion to the previously declared bonus additions."

If an Office proceeds to a distribution of such imaginary or prospective profits, it requires no great penetration to discern that a great injustice must be inflicted on the future members. It was the contemplation of such an occurrence as this that led the author of *Life Assurrance, its Schemes, etc.*, to exclaim, "possibly the representatives of those few members who were *so fortunate as to die* during this halcyon period would reap the advantage of the unworthy trick which had been played:—

'If 'twere then to die, 'twere then to be most happy.'

while, on the other hand, the representatives of those members who might *unfortunately live* some few years longer (thus contributing more largely to the Society's funds) might consider themselves fortunate if they obtained from the wreck even the bare amount originally assured."

But leaving altogether out of the question the injustice likely to result to the members from the "one-sided" mode of proceeding referred to, let us view it simply in relation to the correct principles of preparing a statement of assets and liabilities. It is the business of an actuary to reduce all fluctuating elements down to, and within the rules of *average*, or in other words of certainty. If he errs it should be on the safe side. Hence we hear of "corrections for fluctuations," and "adjustments," without end: and they are known, in most cases, to be necessary. But where are the adjustments and corrections when the whole of the prospective profits are brought into the account as present assets? The actuary who so prepares a valuation, knows full well that, while he is anticipating the profits upon all the existing policies up to the full extent of their possible currency, not more than one-half such policies will run on to maturity. We have already referred to the small proportion of the *Equitable* policies which were continued long enough in existence to become claims. But as this may be considered, and is, to some extent, an exceptional case, we will refer to a more modern instance.

Let us take the first 500 policies issued by the *Economic* Office, and see what had become of them at the end of 30 years; here are the figures:—

Dead	149
Purchased by the Office	118
Lapsed	86
Term expired	28
In existence	119
	500

Now, assuming that all the 119 existing policies became claims by death—a circumstance not very probable, seeing that of the 381 ceasing to exist in that period only 149 were discontinued by death—assuming, we say, this to be the case, only 268, or just over one-half of the entire number observed upon, will have emerged by death. "so that by taking credit for an annuity equal to the margin of the premiums *for the whole of the life* you take more than can possibly be realized."[*] These figures, it must be remembered, apply to an Office of the highest standing: in many Offices "want of confidence," it may be presumed, would add considerably to the lapsed and surrendered policies. It may be useful to note, that of the above policies, those which were determined by death existed on an average for fourteen years; those extinguished by purchase nine years; those which lapsed, three years; and the "term" assurances five years.

The process of valuation now under notice assumes that *all* the policies will be determined by death: whereas, certainly not more than one-half of the entire number issued in any Office, speaking according to modern as well as earlier experience, will be so terminated.

An instance of the results which *can* be produced by such a process of false valuation may be useful. The value of the reversion of £ 1,000,000 on the lives of persons aged 30, is £ 446,750. The net annual premiums to assure £1,000,000 on the same lives is £23,519 Assume that the premiums which the insurers have engaged to pay are "charged" to the extent of 25 per cent., and amount to £29,399, then *the present value of these annual premiums is* £ 558,437. Allowing no deduction for expenses, the profits of the Office, which had granted the policies, are, *by the said method*, £ 111,687, although it has received as actual premiums only £ 29,399 ![†] We do not want to say more.

After this illustration we shall not have much difficulty in acknowledging, that "in these valuations very great fallacies may sometimes lurk."

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[*] *Vide* evidence of Mr. J. J. Downes, before Select Committee, question 1106.

[†] *Vide* English Life Table, No. 2, and Dr. Farr's Letter in his twelfth Annual Report of Registrar-General.

That we are not dealing with an imaginary evil the following testimony will exemplify.

In answer to the question, "Do you suppose that many Offices have divided bonuses upon a principle which the actuaries of other Offices would think unsafe?" Mr. J. J. Downes thus replied:—

> "I have seen it stated in published reports, that a clear divisable surplus of so much remains, but I infer from the practice of the Office that they do not believe that to be the fact, because they state a divisable surplus to a large amount, and recommend a division to a smaller amount. Now, if the Office has an actual surplus, and declares it to be a surplus, they may safely divide it unless they give very good reasons for withholding a portion of it. *If they give a sufficient reason for withholding a portion of such surplus, then I say in their judgment such a surplus does not exist, and ought not to be stated.*"

The reader will at once perceive the force of this reasoning. All the circumstances of an Office being known to the actuary before or during the progress of valuation, or any result which cannot be acted upon is merely fictitious and delusive. Applying the preceding remarks to his own Office (the *Economic*), Mr. Downes continues—

> "If I were to make a valuation on that principle (valuing the gross premiums) I should show a surplus exceeding half a million of money in the hands of our Society, beyond the surplus actually realised; and if I were to say 'There is half a million of money profit,' the members would say 'Let us divide it; if you have that surplus what reason have you for not dividing it?' 'Why it is a surplus that *may come*; supposing that you were in a condition to commute your premiums for the whole term of life into present assets, and to put the amount to your credit in the account, *then* we would have the further surplus of half a million to divide; *but until it is brought there such a surplus does not exist.*'"*

The following writers all speak strongly upon the practice of placing the value of the gross premiums on one side of the account, with no corresponding deductions for the purposes of expenses and contingencies. On this point, indeed, there seems no two opinions:—

Mr. Charles Ansell points out that (as shewn in the illustration just given) it is optional with those who make the assurances to continue their premiums or not as they may think fit, adding:—"And in the meantime you have estimated the profit attributable to each premium as an element of your financial or pecuniary position, and assume that the Institution will certainly receive it until the time the life shall die, *and the party should drop the policy, than you lose a portion of that which you have set down as profit*, and it is not really available, although you have assumed it to be so."

Mr. J. J. Downes expresses similar views almost in the same words. When interrogated, "In what way would you value the future premiums payable to the Office as assets for existing liabilities; would you take the gross amount payable, or a portion of it?" He replied, "I should take only that portion of it supposed to be applicable to the risk, leaving a margin to pay future expenses." And, again: "Then you would not take credit in your balance-sheet for the whole amount of premiums payable to the Office?" His reply being, "No, *that would be very erroneous, because the whole amount payable under the contracts* may never be received; you are not sure of any portion of it beyond that which you have already received." He afterwards supports this view by the following case. "Say I received from A B £40, £10 of which is supposed to be profit for expenses; the whole is worth 15 years' purchase, and 15 years' purchase of the £10 per annum for expenses is worth £150: the policy at the end of the year, on the principle I have given, is worth half the premium which has been paid, say £20 on the one side, then I have £20 of liability on the other, and for £150 of profit I lose my liability of £20 on the other side. I am relieved from that, but I gain a loss of £150 on the other; the Society would therefore be by £130 in worse position than it was before the lapse of the policy, on such an estimate of its position."

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* Question 1,123.

Mr. Higham again follows on the same side. Speaking of valuing the gross premiums he says, "The sum assured is valued and put on one side of the account: the claim of the Company to receive premiums is valued and put on the other side of the account, and the latter is made out to be larger than the former: consequently, as I said before, a policy which the Company would pay money to cancel, appears in their balance-sheet as a valuable asset; that is to say, the same document is a valuable property to the grantor and grantee." He also calls an example to his aid:—"Allow me to suppose the case of a Bank making up its accounts: it owes to its depositors £1,000,000. It has in hand £900,000; it puts down an additional item of assets, profits, we will say at the rate of £10,000 a-year, valued at 20 years purchase: by that means it makes its assets £1,100,000 against £1,000,000 of liabilities, and the result is stated to be a surplus of £100,000. *That principle would never be adopted in a Bank, and I think it ought not to be adopted in an Assurance Company.*"

Mr. W. T. Thomson takes up the matter in rather a different light. "I object (he says) very decidedly to the valuation and exhibition in the balance-sheet, of the difference between the net and gross premiums, I think the Actuary of each Office should know precisely what the value of the difference is; but I object to its being shown or introduced in the balance-sheet, *as calculated to mislead, and to induce policy-holders, Directors, and others* to press for its division, or partial division, while it should be reserved entire."

Mr. S. Ingall is still stronger upon the point. "In my opinion, next to an improvident expenditure, it is the most dangerous practice that can be resorted to in an Assurance Company; and is generally adopted in Offices where there is a deficiency of assets."

Mr. T. R. Edmunds mildly says, while speaking of the correct principles of valuation, "The additions to the premiums are disregarded: the net premiums alone are valued."

An able writer in the *Assurance Magazine* says the loading "will clearly be required in every year to come, as much as in those which have passed, and therefore must be carefully set aside for the purposes in question."

Dr. Farr does not enter very fully into the discussion. He says, "It is urged by one class of actuaries, that the 'charge' should not be brought into account; and what I have said hitherto is in accordance with that view."

Mr. Sang again says, "Now, were we to proceed incautiously, and estimate the present value of the gross premiums due, it is quite clear that we would be *accounting as present property, the value of a fund yet to be realised.* To avoid including this in our estimate, we must take *not the gross premium*, but the *net premium that would have resulted from the best known law of mortality.*"

Mr. Percy M. Dove, in publishing the results of a valuation in his Office, took the precaution, and we think wisely as the times go, of announcing as follows: "The future premiums in existing policies have not been computed at the full amount payable by the assured, but at the lesser amount found by deducting from each the '*loading*' or addition made for expenses and profit. By this method the sources of profits are entirely disunited from consideration in the demonstrations, and we deal solely and exclusively with the profit made within the period of investigation." Other Managers will do well to follow this example.

Now, after all that has been said against the introduction of the loading into valuations, it may be startling for us to assert that no valuation can ever be considered complete which does not include the value of the loading. Yet such is really the case, with, however, this important provisio, that it should appear *on both sides of the account.*"

We are not claiming credit for originating this view of the case. It has long since had its able supporters, and amongst these, actuaries who, by reason of the position they occupy, may be ranked at the head of their profession. The editors of the *Assurance Magazine* (vol. iii., p. 292–3) put this unanswerable case:—

> "Let us suppose a Company to be in the receipt of an income from premiums of £100,000 per annum, and that its business was commenced with rates supposed to be equal in every case to the risk, a marginal addition [loading] of 25 per cent. being made to them throughout. The portion of income required in such case *for the sums assured merely* would hence be £80,000, and the remaining £20,000 per annum *would be the provision for extra contingencies.* Let us now imagine (they continue) an investigation to be made as to the real rate of mortality prevailing, and that it *be found that in lieu of the rate originally assured being borne out, a certain increased one is proved to obtain, the premiums based upon which would make it necessary to devote* £90,000 *instead of* £80,000 *per annum to meet the risks;* the surplus income being thus reduced to £10,000 per annum only, instead of £20.000. Now as the 'change in the rate of premium consequent upon that in the rate of mortality, is *not immediately apparent*, this reduction in the surplus income is *not unlikely to escape observation. where the net premiums alone are valued*, and matters in this way might be allowed to go on as if no such reduction had taken place—a state of things impossible to be where the same, or nearly the same, proportion of the value of the net premiums is always retained. In short, it cannot be too carefully borne in mind that the only means we have in this business of judging as to the future must be derived from a vigilant observation of what has taken place in circumstances as nearly as possible of a similar character, and that thus it behoves us to make, from time to time, investigations with this object, and to effect such changes *in the provision for future liabilities as may thereupon be found necessary.* . . . . We thus virtually exercise a power of raising or depressing the future premiums, as the necessities of the case may demand; or what is the same thing, we *increase or diminish the returns of surplus* in obedience to the dictates of our experience, and in accordance with the law which regulates. fulfilling in this way, and obviously in the proper manner, the very objects with which the marginal additions were originally made."

We most entirely agree with all the authorities quoted in depre-suppositions upon which our Table is founded, we can do so in an infinite variety of ways. It may be worth while to refer the reader back to page 156, where out of 5,642 persons shewn to be alive by the Carlisle Table at age 30, but 3,520 are alive at age 61, and but 3,143 at age 64. Who is to calculate that he will not be one of the 2,122 who die during the first 31 years, or one of the 377 who die during the last 3 years? The only instances in which there is even a chance of a person losing by Life Assurance is, where life is prolonged considerably beyond the average; or, as another writer has expressed it, "unless he be haunted with the fear of living so long as to have to pay an absolutely greater sum in premiums than the amount of his policy. In that case we may say with Hamlet—

> 'There's the respect
> That makes *calamity of so long life*.'

Yet (continues the writer) we venture to think that few persons are so completely sordid as to regret the prolongation of life, because it condemns them to make a bad bargain."

We have one word of explanation to add at this point. For most of our examples and comparisons throughout this work the age of 30 has been selected. Our reason for selecting that age is that we believe it to be about the average age at which lives are now assured in this country. At the commencement of this century Mr. Babbage found the average age to be 47. Some few years since Dr. Farr stated the average to be 35. Each year, happily, the average has been in favour of the younger ages: we take the present average, therefore, at 30.

Let us hope that Agents will now be armed with arguments to combat all the foolish notions of this class. The following section also will be of service in general conversation on the subject of Investments.

INTEREST—ITS EFFECT ON INVESTMENTS.

It would seem appropriate to this division of our subject to present a few illustrations on the effect of Interest upon Investments. In no class of investments perhaps are its effects more apparent than in those of Life Assurance. In one instance we see premiums reduced to one-half or even one-fourth of what they could be were interest excluded from the calculation. In another, by a slight increase in the rate realised, bonuses become increased to almost incredible amounts. By the simple substitution of one rate of interest for another in actuarial valuations, Offices which are really insolvent, may be made to all appearance to revel in their surplus thousands. In fact, the consideration of interest meets us at all points. By its aid sums so insignificant as never to be heeded become amassed and multiplied into untold fortunes. INTEREST, indeed, is the very ALCHEMY of Life Assurance and all monetary Investments: it transmutes even the most vulgar coppers into masses of hard and solid gold. Let the reader cast his eye over the following Table, and then say if our estimate of the importance of interest is an exaggerated one? It has been prepared in a simple form, as furnishing a more ready means of illustration.

TABLE

Showing the aggregate value of various sums per diem for various terms of years, both net, and as improved at 5 per cent. Compound Interest.

Per day.	Per year.		10 years.	20 years.	30 years.	40 years.	50 years.
	£ s. d.		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1d.	1 10 5	Without interest...	15 4 2	30 8 4	45 12 6	60 16 8	76 0 10
		With interest	19 2 7	50 5 9	101 0 10	183 14 4	318 7 8
3d.	4 11 3	Without interest...	45 12 6	91 5 0	136 17 6	182 10 0	228 2 6
		With interest	57 7 9	150 17 3	303 2 6	551 3 0	955 3 0
4d.	6 1 8	Without interest...	60 16 8	121 13 4	182 10 0	243 6 8	304 3 4
		With interest	76 10 4	200 3 0	404 3 4	734 17 3	1273 10 8
6d.	9 2 6	Without interest...	91 5 0	182 10 0	273 15 0	365 0 0	456 5 0
		With interest	114 15 6	301 14 6	606 5 1	1102 5 11	1910 6 0
8d.	12 3 4	Without interest...	121 13 4	243 6 8	365 0 0	486 13 4	608 6 8
		With interest	153 0 8	402 6 0	808 6 9	1469 14 7	2547 1 4
1s.	18 5 0	Without interest...	182 10 0	365 0 0	547 10 0	730 0 0	912 10 0
		With interest	229 10 11	603 9 1	1212 10 2	2204 11 11	3820 12 0
2s.	36 10 0	Without interest...	365 0 0	730 0 0	1095 0 0	1460 0 0	1825 0 0
		With interest	459 1 10	1206 18 2	2425 0 4	4409 3 10	7641 4 0
4s.	73 0 0	Without interest...	730 0 0	1460 0 0	2190 0 0	2920 0 0	3650 0 0
		With interest	918 3 9	2413 16 4	4850 0 8	8818 7 8	15,282 8 1
8s.	146 0 0	Without interest...	1460 0 0	2920 0 0	4380 0 0	5840 0 0	7300 0 0
		With interest	1836 7 5	4827 12 7	9700 1 5	17,636 15 4	30,564 16 2
16s.	292 0 0	Without interest...	2920 0 0	5840 0 0	8760 0 0	11,680 0 0	14,600 0 0
		With interest	3672 14 10	9655 5 2	19,400 2 10	35,273 10 8	61,129 12 4
£1.	365 0 0	Without interest...	3650 0 0	7300 0 0	10,950 0 0	14,600 0 0	18,250 0 0
		With interest	4590 18 7	12,069 1 6	24,250 3 6	44,091 18 4	76,412 0 5

Take the case of *one shilling* per day—a sum which many persons in the middle class of life could invest without the slightest inconvenience—and see what it will produce. In 30 years it amounts to £1,212 10*s.* 2*d.*, made up as follows:—principal accumulated, £547 10*s.* 0*d.*—*interest*, £665 0*s.* 2*d.*!—together, £1,212 10*s.* 2*d.* In 50 years the principal amounts to £912 10*s.*, while the *interest* thereon has reached the sum of £2908 2*s.*, being more than *three times greater* than the principal; and giving the total accumulations at £3,820 12*s.* Surely out of small beginnings come great endings!

These extraordinary results are, without doubt, due to the operations of *compound interest*—a term involved in great mystery to the uninitiated; and upon which some little explanation appears necessary. To say that compound interest arises from *capitalising* the ordinary interest as it falls due, is by no means an intelligible, although it is a correct definition. Dr. Milne made the matter somewhat more understandable in this form—"If a lender of money, instead of insisting upon the payment of his simple interest whenever it becomes due, will indulge the borrower with the further loan of that interest itself, he shall not, therefore, suffer the loss of the interest such interest money would have yielded him had he exacted it when due, and immediately advanced it again either to the same borrower or another as a new loan."

Mr. Hillman has given a still more lucid explanation, and as it is accompanied by one or two examples, it will be found of practical use to the reader:—

> "*Compound Interest* is the recompense for the loan and the forbearance of the simple interest arising therefrom, which is added to the original sum at each period of its becoming due, and forms a new principle upon which simple interest is paid at the next period, when the same process is undergone until the sum is repaid with its accumulations. It will be evident that the shorter the period agreed on for the payment of the interest the greater will be the accumulation at the end of the term for the payment of the loan. For example: suppose the sum of £1000 to be lent at 4 per cent. per annum—compound interest—to each of three persons, A. B. C. for the term of twenty years—A to pay his interest yearly, B half-yearly, and C quarterly. A. at the end of the period, would have to pay the lender £2.191 2*s.* 5½*d.*; B £2.208 0*s.* 9½*d.*; C £2.216 14*s.* 3½*d.* Compound interest not only enables us to ascertain the sum to which any principal lent will amount at the expiration of a given period, but also the *amount* at a given time of yearly or any other periodical savings. . . . . These illustrations will be sufficient to convince the *lender* of money that it is his benefit to procure the payment of interest at the shortest possible intervals."

The relative effects of simple and compound interest may be well exhibited in the following manner. Money will double itself at varying rates of interest, as follows:—

At 2	per cent.	*Simple*	Interest	in 50	years.	*Compound*	Interest	in 35	years.
2½	„	simple	„	40	„	compound	„	28	„
3	„	simple	„	33⅓	„	compound	„	23½	„
3½	„	simple	„	28½	„	compound	„	20¼	„
4	„	simple	„	25	„	compound	„	17⅔	„
4½	„	simple	„	22¼	„	compound	„	15¾	„
5	„	simple	„	20	„	compound	„	14¼	„
6	„	simple	„	16⅔	„	compound	„	12	„
7	„	simple	„	14¼	„	compound	„	10¼	„
8	„	simple	„	12½	„	compound	„	9	„
9	„	simple	„	11	„	compound	„	8	„
10	„	simple	„	10	„	compound	„	7¼	„

The difference ranging from fifteen down to about three years.

But, in order to demonstrate still further the great difference in effect between simple and compound interest, Mr. Francis Baily calculated, up to the year 1810, that if *one penny* had been put out at 5 per cent. *compound* interest at the birth of Christ, it would have amounted to more money than could be expressed by 357 millions of globes, each equal to the earth in magnitude, all of solid gold of standard quality, worth at the mint price £ 3 17*s.* 0½*d.* per ounce. Whereas, if the penny had been put out at the same rate of *simple interest*, the amount in the same time would have been only *seven shillings and seven pence half-penny.*[*]

Mr. Hillman carried the larger calculation on to the end of the year 1846; and at the same rate the number would be 2,107,530,864—two thousand one hundred and seven millions, five hundred and thirty thousand, eight hundred and sixty-four worlds of solid gold! Supposing the diameter of the earth to be 8,000 miles, these globes, placed in a straight line, would reach into space 16,860,246,912,000—sixteen billions, eight hundred and sixty thousand two hundred and forty-six millions, nine hundred and twelve thousand miles—quantities too large for human comprehension.

The wonderful productive power of the *penny* may be illustrated in another and more practical manner. Every additional penny in the pound which we pay for *income tax* in this country raises an additional *million* sterling. Now one million per annum invested at *four per cent., compound interest,* for 82 years would produce *six hundred millions*, or a sum nearly sufficient to wipe off the whole of the *National Debt!* A hundred years at this rate would entirely discharge it.

It has been more than once observed, "few people appreciate the reversionary value of small sums." By way of still further exemplifying the wonderful power of interest, we have extracted the following Table from Mr. De Morgan's work on Probabilities. We draw a few of its uses from the last part of the Table. £ 138 invested for 100 years at 2 per cent. compound interest will amount to £ 1,000; £ 85 at 2½ per cent. for a like period will reach £ 1,000; at 3 per cent, £ 52 will reach that amount; at 3½ per cent., £ 32; at 4 per cent., £ 20; at 4½ per cent., £ 12; and at 5 per cent., £ 8. At 6 per cent. £ 3 will become £ 1,000 in 100 years, and at 7 per cent., £ 1. At 8 per cent. £ 1 will become a £ 1,000 in 95 years; at 9 per cent. the like sum in 85 years; and at £ 10 per cent., £ 1 will become £ 1,000 in seventy-five years!

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[*] See Willich's popular tables. This calculation was first started in a note appended to the preface of Dr. Price's work on *Reversionary Payments.*

TABLE

Showing the number of pounds which will in a certain number of years, and at any of the following rates of Interest, produce £1,000—the fractions of a £ being given or taken, as the case may be.

Yrs.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
	£	£	£	£	£	£	£	£	£	£	£	£
1	980	976	971	966	962	957	952	943	935	926	917	909
2	961	952	943	934	925	916	907	890	873	857	842	826
3	942	929	915	902	889	876	864	840	816	794	772	751
4	924	906	888	871	855	839	823	792	763	735	708	683
5	906	884	863	842	822	802	784	747	713	681	650	621
6	888	862	837	814	790	768	746	705	666	630	596	564
7	871	841	813	786	760	735	711	665	623	583	547	513
8	853	821	789	759	731	703	677	627	582	540	502	467
9	837	801	766	734	703	673	645	592	544	500	460	424
10	820	781	744	709	676	644	614	558	508	463	422	386
11	804	762	722	685	650	616	585	527	475	429	388	350
12	788	744	701	662	625	590	557	497	444	397	356	319
13	773	725	681	639	601	564	530	469	415	368	326	290
14	758	708	661	618	577	540	505	442	388	340	299	263
15	743	690	642	597	555	517	481	417	362	315	275	239
16	728	674	623	577	534	494	458	394	339	292	252	218
17	714	657	605	557	513	473	436	371	317	270	231	198
18	700	641	587	538	494	453	416	350	296	250	212	180
19	686	626	570	520	475	433	396	331	277	232	194	164
20	673	610	554	503	456	415	377	312	258	215	178	149
21	660	595	538	486	439	397	359	294	242	199	164	135
22	647	581	522	469	422	380	342	278	226	184	150	123
23	634	567	507	453	406	363	326	262	211	170	138	112
24	622	553	492	438	390	348	310	247	197	158	126	102
25	610	539	478	423	375	333	295	233	184	146	116	92
26	598	526	464	409	361	318	281	220	172	135	106	84
27	586	513	450	395	347	305	268	207	161	125	98	76
28	574	501	437	382	333	292	255	196	150	116	90	69
29	563	489	424	369	321	279	243	185	141	107	82	63
30	552	477	412	356	308	267	231	174	131	99	75	57
35	500	421	355	300	253	214	181	130	94	68	49	36
40	453	372	307	253	208	172	142	97	67	46	32	22
45	410	329	264	213	171	138	111	73	48	31	21	14
50	372	291	228	179	141	111	87	54	34	21	13	9
55	337	257	197	151	116	89	68	41	24	15	9	5
60	305	227	170	127	95	71	54	30	17	10	6	3
65	276	201	146	107	78	57	42	23	12	7	4	2
70	250	178	126	90	64	46	33	17	9	5	2	1
75	226	157	109	76	53	37	26	13	6	3	2	1
80	205	139	94	64	43	30	20	9	4	2	1	—
85	186	123	81	54	36	24	16	7	3	1	1	—
90	168	108	70	45	29	19	12	5	2	1	—	—
95	152	96	60	38	24	15	10	4	2	1	—	—
100	138	85	52	32	20	12	8	3	1	—	—	—

CHAPTER II.

PURCHASE OF LIFE POLICIES—MODE OF ASCERTAINING THEIR VALUE.

There are few points upon which greater misapprehension prevails than upon the value of Life Policies. One class of persons look at their value simply in relation to the premiums paid upon them, without any regard to the *risk* incurred during the currency of the policy; the other class look to the sum assured, without taking any account that that sum only falls payable on the extinction of the life, and that in the meantime premiums are payable to the Office to keep the policy in force. Each of these parties is therefore as far from the true solution of the difficulty as it is possible to imagine.

Agents are constantly appealed to by persons who, either from curiosity or business motives, desire to know something of the value of their policies; and although none but the professional actuary can determine with exactness all the points which require to be considered in such cases, still the main considerations may be discussed and familiarised; and something like a general principle laid down for the guidance of our readers.

The valuation of the assets and liabilities of a Life Office, as we have seen, involves three processes:—1st. To ascertain the *present value* of the reversion of the sum originally assured after extinction of the Life. 2nd. To ascertain the present value of the reversion of the additions made to the policy (if any) after the extinction of the Life; and 3rdly. To ascertain the present value of all the annual premiums which will probably be made thereafter on the policy. The latter value subtracted from the two former gives the value of the policy, or the money which the Office owes to the assured for his interest therein.

The same process which determines the value for the Office estimate will determine the value as between buyer and seller. Of course where no bonus additions have been made, the second process will not occur in either instance.

If we keep in mind that Life Assurance is a "contract among those who invest, that the *inequalities of life* shall be compensated, so that those who do not live their average time shall be sharers in the good fortune of those who exceed it"—we shall readily understand that an Office can never be in a position to return more than a portion of the premiums paid on any particular policy. This, indeed, has been fully explained in our chapters on "surrender value of policies," (p. 232) and on "premiums" (vide p. 258), the "natural" premium there shown (without any loading) having in all cases to be deducted, and in addition to this, of course, a fair proportion of the loading of the "equalized" premium for expenses of management.

For the difference between the premiums paid and the "surrender value" of the policy, the person assured has had the advantage of the continued guarantee of the sum named in his policy had he died. Fortunately he has survived, and has therefore had the satisfaction of giving instead of receiving. Surely his reward lies in his continued enjoyment of life!

The rule which Dr. Price laid down with respect to Offices, applies with equal, if not more, force to individual purchasers: "The plan of every Society ought always to be such that the losses arising from the discontinuance of payment should fall on the policy-holder, and never on the Society." The man who has to sell his policy has to sustain all the pecuniary sacrifices attending such sale. The purchaser it is only fair to expect will be on the safe side: but how is he to know when he is safe? It is the purpose of the present chapter to tell him.

In our chapter on the method of ascertaining the surplus we have already shown in detail the process which has to be gone through to ascertain the value of each individual policy. We have now to furnish the reader with the means of ascertaining the several values employed in the process.

Before coming to the actual tables necessary for this purpose we may glance at one or two considerations which naturally arise on the question. The first is, that the purchaser of a life policy, providing he is not personally acquainted with the person whose life is assured, may constantly be put to trouble and expense in order to ascertain, prior to each payment which falls due, that the assured is still alive; and, secondly, that if alive he has not trespassed beyond the limits of travel or residence prescribed by the conditions of the policy. This last condition is, if possible, the more important of the two—because the policy may thereby become absolutely forfeited; or, if not forfeited, such an additional payment may be demanded at any moment, as to render the purchase, however apparently good at the time, a ruinously bad speculation. The difficulty in proving death in such cases ought likewise not to be overlooked. On the other hand, the purchaser possesses an element of *certainty*, or of security, which (except in one or two Offices) never attached to the policy while in possession of the life assured:—viz., that when in hands of a *boná fide* purchaser the policy is not rendered void either by suicide, duelling, or even death by the hands of justice.[*] The chances, however, of these latter contingencies are not nearly so perilous as of those first mentioned.

On the stability of the Office in which the Assurance has been effected, and its chances of success if a young Office—or, maintaining its former rates of bonus, if an old one—some attention should also be bestowed. In a word: neither the prudential motives which may be supposed to have actuated the assured in effecting the policy nor the particular interests or connexions which led him to any particular Office, can have the slightest weight with the purchaser: hence he can only look at the matter purely as a question of profit and loss, or of his own individual security.

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[*] The question of the assignment of policies is an important one to Assurance Offices. The custom has arisen partly from competition, and partly out of a principle of the common law that a man may dispose of any property he is possessed of. The change in the condition appears essential to the assignment, although it is certainly prejudicial to the Office. An assigned policy may be forfeited by overstepping the limits of foreign travel or residence, although not by death by suicide, duelling, or the hands of justice: the assumption being, we presume, that the holder of the policy can compensate the Office for a breach of the former condition, but not of the latter ones.

The most simple method of ascertaining the value of a policy for a purchaser appears to be this. Ascertain the premium paid at the time the policy was effected, and the premium which *would have to be paid* for a policy of a like amount on the same life at its present age. An example will make the plan better understood. Assume a person to assure at age 30 for £1,000, and to pay £25 annual premium for his policy. Assume him, also, to remain assured until he reaches the age of 50, and that he then desires to sell the policy. The first step towards ascertaining the value is to ascertain the premium to be paid at age 50 for a like Assurance. This may be taken at £45 per annum. The vendor then offers to the purchaser an article which has become more valuable by £20 per annum than when he, the vendor, first obtained it. The purchaser has to ascertain the value of this £20 per annum to him during the probable existence of the policy, and calculated upon an assumption that he shall realise a certain rate of interest on the investment—say, for our present purpose, 4 per cent. This is simply done by reference to an annuity table,—the *Carlisle* 4 per cent. table being most frequently consulted in such cases; and it shows the value of an annuity on £20 on a life aged 50 to be in round numbers £257 8*s.*

This method has the approval of Professor de Morgan, who, several times refers to it in his Essay on Probabilities.[*] It does not, it will be observed, take into account either the bonus additions made to the policy, or the future premiums to be paid; and, therefore, it must be admitted that simplicity is secured somewhat at the expense of exactness.

Where the bonus additions are considerable, or where great exactness is requisite, the plan of valuation should be that given at page 291, as the mode employed in conducting the valuations for bonus; and the tables at the end of this chapter furnish the means of carrying out the process. An example or two will be useful.

As some of our readers may require to use the following process in practice we must be more exact than in the former case. In such matters, indeed, exactitude is of great moment. The profit or loss of a transaction may and frequently does depend upon this. Assume a person assured for £1,000; that he commenced the assurance at age 30, paying a premium of £25 per annum, and that on arriving at the age of 50 he has occasion to dispose of his policy. What should the purchaser give? Turning to Table No. 1, the *present value* of £1,000 on the (probable) death of a person aged 50 is (see 4 per cent. column) £466. But from this has to be deducted the present value of the annuity of £25, being the annual premium payable to keep the policy in force. This value is derived from Table No. 2. The present value of an annuity of £1 at age 50 (Carlisle 4 per cent. Table) is £12 17*s.* 5*d.* (12·869), which being multiplied by 25 gives £321, which deducted from the £446, leaves the value of the policy only £145, or less by more than £100 than the value shown in the previous example. But since we have begun to be exact, we must remember that the rates which demand a premium of £25 for an assurance of £1,000 at age 30 will be intended to yield a fair, or indeed if the Office be well selected, a good bonus return: hence in valuing the policy we must value all additions to it, otherwise an injustice will be done to the vendor. Now the probable reversionary bonus additions on a £1,000 policy, in a good Office, for a period of twenty years, would be some £300 at least. The present value of £300 on a life aged 50 is, according to Table No. 1, £140 (being ·46658 multiplied by 300), or nearly as much as the value of the policy—there being no annuity value to set off against the bonus, so that the value of the policy and additions turn out to be £285, instead of only £145, as shown without the bonus. This is more favourable to the vendor by nearly £30 than the result shown by the annuity value alone, as given on the previous page.

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[*] "To find the present value of a policy of Assurance, at the moment before a premium becomes due, subtract the premium which is to be paid from the premium which would be paid if the same party made the same Assurance at the present time. Find the present value of an annuity on the life of the party assured, of the same yearly amount as the preceding difference, and this value increased by one year's purchase is the present value of the policy."—*Professor de Morgan.*

But there are other elements of consideration. In the above examples we have assumed the purchaser to be satisfied with the prospect of *four* per cent. interest for his money. He may, however, in entering upon this class of speculation consider himself entitled to make five or even six per cent.; and this determination will considerably alter the prospects of the vendor. For the purpose of illustrating this, we will tabulate the above example under three several rates of interest, viz., *four* per cent. as used above, *five* and *six* per cent.

FOUR PER CENT.

Age 50—Policy £1,000—Bonus £300—Annual Premium £25.

Present value of sum assured...	£466	
Present value of bonus...	140	
	606	
Deduct value of annuity of premium...	321	
Leaving value		£285

FIVE PER CENT.

Present value of sum assured...	£397	
Present value of bonus...	119	
	516	
Deduct value of annuity of premium...	291	
Leaving value		£225

SIX PER CENT.

Present value of sum assured...	£341	
Present value of bonus...	102	
	443	
Deduct value of annuity of premium...	265	
Leaving value		£178

Both the value of the sum assured and bonus additions, and the value of the annuity of the premium, decrease as the rate of interest increases. If the value of the annuity decreased to the *same extent* as the two former values decrease, of course the value of the policy would remain the same, whatever rate of interest might be assumed; but this is seen not to be the case. If the purchaser desired to make some exorbitant rate of interest, as ten or twelve per cent., he could not afford to give any purchase-money for £1,000, even of 20 years' standing. We have very rarely known policies to be purchased on such terms as would probably secure the purchaser more than four or five per cent., particularly if purchased by public auction.

It is important that we should remind the reader that many causes may exist or combine to render the process of valuing a policy far more complicated than that we have just shown. Such, for instance, as where the premium is on an increasing or decreasing scale, or where more than one life is interested; as, for instance, where the amount of the policy becomes payable on the death of the first or last of two, three, or more lives. The computation then becomes one which none but the professional actuary can approach. Upon these points we shall not therefore enter further. Of course, where the bonuses have been applied to reduction of premium, the reduced premium, that is the premium payable at the time of the sale of the policy, only will be valued. An example may be given based upon the case already assumed, viz., £1,000 assured; original premium £25; age at time of sale 50. In this case there will be no bonus to value; and we must assume, for the sake of simplicity, that the £300 had been applied to the reduction of the premium just previous to the policy being sold. £300 will purchase, according to the Carlisle (4 per cent.) Table, an annuity of £10 10*s*. at age 50: the premium is therefore reduced by that amount. The figures then stand as follows:—

Value of sum assured	£466
Less value of annuity of reduced premium...	186
Leaving value	£280

A result differing only £5 from that given on the previous page, where the same rate of interest has been assumed. The cause of this slight difference could be explained if necessary.

As many of our readers may be presumed to be almost entirely unfamiliar with the uses of the following Tables, except in so far as they have been exemplified in the preceding examples. it appears desirable to give some brief explanation of their construction and purposes.

TABLE No. I.

This Table shews the present value of £1, £10, £100, or £1,000, to be received on the death (or, to be more exact, to be received at the end of the year in which death may take place), of a life at any age, from birth up to 103. It is based upon the *Carlisle* Table of Mortality; and in its construction the element of *interest* has been taken into account. The *present value* of a sum of money is, as we have elsewhere explained, the amount of such sum, less the interest it would produce at any given rate during the period which is to elapse before the payment is to be made. The present value of £1,000 on a life aged 50, is (assuming interest at 4 per cent.) such a sum as would, by being improved at the rate of interest named, amount to £1,000 on the probable extinction of a life now of that age, viz., £466. If interest be taken at 5 instead of 4) per cent., the present value of £1,000 payable on the death of a life aged 53 is £397.

A person buying the reversion of—or what is the same thing a life policy for—£1,000, having made up his mind what rate of interest he wishes to realise on his investment, may see at a glance what sum he should give for the same. The price varies with each year of age; and in the case of a life policy, the value of the future premiums to be paid to keep the assurance in force has to be taken into account. This last value is obtained from Table No. 2.

Those readers who are not familiar with decimal notation will require to know how this and the following Tables are read, in order to obtain the values of £10, £100 or £1,000 as above stated. The method is simple enough—simplicity being a quality inherent to the decimal system. It rests in *placing* the decimal point (·). In the example above given, the point is to the left of all the figures. Each move of the point to the right adds the power of ten to the figures on the left. Thus, the present value of £1, payable on the death of a life aged 50 (4 per cent. column) is £·46658. The present value of £10 on the same life, at same rate of interest, is £4·6658; of £100, £46·658; of £1,000, £466·58. The ·58 left over is read as follows: the 5 stands for five-tenths of a pound, or 10*s.*; the 8 for eight-hundredth parts of a pound, or 1*s.* 8*d.* The ·58 represents 11*s.* 8*d.* But if it was required to know the value of £10,000, or £100,000, these two figures furnish the value: the £10,000 being £4,665·8; the £100,000, £46,658·.

TABLE No. II.

This Table gives the present value of an annuity of £1, £10, £100, or £1,000, to be received during the unexpired portion of the life of a person of any age from birth up to 103. The ordinary method of estimating the value of an annuity or an estate is by multiplying the amount of the annuity or rent by the number of years it may be expected to be received. But this method is necessarily very erroneous, because the element of interest is left out of the account. By this process of valuing, a person purchasing an annuity of £25 per annum on a life aged 50, would look to the Mortality Table, and finding the expectation of life at that age to be 21 years, would arrive at £ 525 as the value. But if he wished to realize 4 per cent. interest, this Table shews him he cannot afford to give more than £ 321, or not so much by more than £ 200. This last value is obtained by casting the eye down the 4 per cent. column to age 50, where the figures stand at 12·869 (or £12 17*s.* 4*d.* for every £ 1 of the annuity), which, multiplied by 25, gives the result named.

The peculiar feature of this Table is, that it not only gives the present value of annuities, but that the same figures represent years and decimal parts of years. Thus, in the case just given, it is optional whether we treat the 12·869 (column 3, age 50) as £ 12 17*s.* 4*d.*, or 12⅚ years. Taking this last view, let us multiply the supposed annuity of £ 25 by 12⅚ years, and we have the same result, viz., £ 321, as the value of the annuity.

The value of these Tables (I and II.) in all assurance calculations, will only be fully appreciated as the reader comes more fully to understand them.

TABLE NO. III.

This Table shows the present value of £ 1 (or, as already explained, of £10, £100, £1,000, or upwards) to be received at the end of any given number of years not exceeding 100, discounted at the 3, 4, 5, 6, 7, 8, 9, or 10 per cent. compound interest.

The element of mortality does not enter into this Table. It has to do with fixed, and not contingent, events or periods, and has, therefore, no direct bearing upon Life Assurance calculations. Still it has many uses, as will be obvious to the reader.

TABLE NO. IV.

This Table shows the annuity which £ 1 (or, on the principle already explained), £ 10, £ 100, or £ 1,000, will purchase for any number of years, from 1 up to 100, or for a perpetuity at the several rates of interest following, viz., 3, 4, 5, 6, 7, 8, 9, and 10 per cent.

Thus £1 to be improved at 3 per cent. interest, will purchase an annuity of 1*s.* 4*d.* (·0672) for 20 years. £ 10, therefore, at 3 per cent., will purchase an annuity of 13*s.* 5*d.* (·672); £ 100 would secure an annuity of £ 6 14*s.* 5*d.* (6·72), or £ 1,000, of £ 67 4*s.* for twenty years certain.

But if 4 per cent. interest were to be realized, at 4 per cent. £ 1 would purchase an annuity certain for 20 years, of 1*s.* 6*d.*; £10, of 14*s.* 9*d.* (·736); £ 100, of £ 7 7*s.* 3*d.* (7·36); and £ 1,000, of £ 73 12*s.* (73·6).

As the rate of interest, at which the principal is to be improved, increases, the amount of the annuity also increases. Under most of the Tables, the higher the rate of interest assumed to be realized, the lower the values given; but with annuities this rule is reversed, as the purchaser secures the advantage of the higher rate.

The element of mortality does not enter into this Table.

TABLE No. V.

This Table shows the manner in which £1, £10, £100, or £1,000 invested at any given period, at a given rate of interest, will accumulate at a compound ratio during any period for which it may be invested, from 1 to 100 years.

This Table will be found exceedingly useful in all matters connected with investments, more particularly where it is important to test the effect of varying rates of interest. The results are very striking. £ 1 invested for 50 years, at 2 per cent., will amount to £2 14*s*. 0*d*. (2·691); at 5 per cent. it will amount to £ 11 9*s*. 0*d*. (11·467); at 10 per cent. to £117 8*s*. 0*d*. (117·390). In 100 years, £1 invested at 2 per cent., will amount to £ 7 5*s*. 0*d*. (7·244); at 5 per cent. £ 131 10*s*. 0*d*.; or at 10 per cent., to £ 13,780 12*s*. 0*d*. (13780·61)!

If the examples are extended into tens, hundreds, or thousands, the results appear still more startling.

TABLE No. VI.

This Table is similar in its construction to the last, but it shows the accumulation of £ 1, £ 10, £100, or £1,000 *per annum* (as distinguished from a given sum paid down) for any number of years, from 1 to 100, at a given rate of interest, viz., 2, 3, 4, 5, 6, 8, and 10.

Thus £ 1 *per annum* for 50 years, improved at 2 per cent., compound interest, will amount to (in principal and interest) £84; at 5 per cent., to £209; and at 10 per cent., to £ 1,163! In 100 years, £1 *per annum*, improved at 2 per cent., will amount to £ 312; at 5 per cent., to £ 2,610; and at 10 per cent., to £ 137,796!

In comparison of the rates of premium of the different Offices, this Table will be found of service: as also in many other respects in connexion with Assurance investments.

TABLE No. VII.

This Table shows the present value of an Annuity of £1 (or £10, or £100, or £1,000) for any number of years not exceeding 100, at the following several rates of interest, viz.: 3, 4, 5, 6, 7, 8, 9, and 10 per cent.

By means of this Table the value of an Annuity certain for any number of years is ascertained with ease; the purchaser first having simply to determine the rate of interest he desires to realize on his investment.

The values are given for each half year up to 50. This will be found of advantage.

TABLES.

No. I.—The present value of £ 1 to be received at death (Carlisle Table).

No. II.—The present value of an Annuity to be received during life (Carlisle Table).

No. III.—The present value of £ 1, to be received at the end of any given number of years.

No. IV.—The Annuity which £ 1 will purchase for any number of years.

No. V.—The compound accumulations of £ 1.

No. VI.—The compound accumulations of £ 1 *per annum.*

No. VII.—The present value of an Annuity of £ 1.

TABLE, No. 1.

Shewing the present value of £1 (or of £10, £100, or £1,000) to be received at the end of the year in which a life may be expected to die, according to the Carlisle Table of mortality.

Ages.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	Years.
0	·46641	·41224	·37700	·35251	·33421	·32015	0
1	·38587	·32483	·28595	·25974	·24079	·22674	1
2	·34463	·27976	·23891	·21179	·19258	·17867	2
3	·31021	·24173	·19886	·17065	·15097	·13696	3
4	·29267	·22187	·17757	·14857	·12847	·11430	4
5	·28079	·20800	·16238	·13255	·11198	·09748	5
6	·27633	·20211	·15548	·12491	·10387	·08904	6
7	·27572	·20038	·15286	·12163	·10007	·08489	7
8	·27764	·20137	·15305	·12117	·09916	·08363	8
9	·28125	·20419	·15514	·12264	·10021	·08430	9
10	·28606	·20833	·15862	·12558	·10263	·08637	10
11	·29145	·21313	·16281	·12921	·10577	·08919	11
12	·29681	·21789	·16695	·13277	·10891	·09193	12
13	·30222	·22272	·17114	·13640	·11211	·09474	13
14	·30771	·22762	·17543	·14013	·11538	·09763	14
15	·31315	·23249	·17967	·14381	·11859	·10045	15
16	·31833	·23706	·18362	·14715	·12147	·10289	16
17	·32334	·24150	·18733	·15026	·12408	·10511	17
18	·32841	·24590	·19110	·15343	·12677	·10733	18
19	·33362	·25052	·19505	·15677	·12958	·10970	19
20	·33901	·25532	·19919	·16028	·13259	·11222	20
21	·34455	·26031	·20352	·16402	·13579	·11496	21
22	·35037	·26562	·20819	·16809	·13933	·11807	22
23	·35637	·27115	·21310	·17240	·14312	·12141	23
24	·36252	·27690	·21824	·17692	·14711	·12496	24
25	·36808	·28289	·22367	·18174	·15136	·12874	25
26	·37548	·28901	·22919	·18672	·15581	·13267	26
27	·38218	·29538	·23500	·19198	·16052	·13689	27
28	·38890	·30176	·24086	·19725	·16529	·14119	28
29	·39531	·30781	·24633	·20211	·16962	·14504	29
30	·40129	·31338	·25129	·20642	·17335	·14830	30
31	·40734	·31903	·25633	·21083	·17714	·15155	31
32	·41357	·32491	·26162	·21547	·18120	·15504	32
33	·42010	·33113	·26729	·22051	·18564	·15889	33
34	·42694	·33771	·27333	·22594	·19049	·16319	34
35	·43399	·34457	·27967	·23172	·19565	·16778	35
36	·44117	·35170	·28633	·23783	·20115	·17274	36
37	·44870	·35901	·29319	·24411	·20684	·17793	37
38	·45624	·36649	·30024	·25062	·21279	·18326	38
39	·46393	·37416	·30752	·25736	·21894	·18889	39
40	·47156	·38178	·31477	·26404	·22509	·19444	40
41	·47893	·38911	·32167	·27038	·23085	·19963	41
42	·48621	·39636	·32852	·27666	·23648	·20467	42
43	·49352	·40364	·33538	·28294	·24210	·20971	43
44	·50108	·41120	·34257	·28957	·24805	·21504	44
45	·50885	·41905	·35010	·29653	·25440	·22074	45
46	·51694	·42734	·35810	·30400	·26127	·22696	46
47	·52542	·43607	·36662	·31204	·26873	·23378	47
48	·53439	·44542	·37586	·32087	·27697	·24141	48
49	·54406	·45565	·38610	·33077	·28639	·25030	49
50	·55429	·46658	·39714	·34164	·29679	·26022	50
51	·56509	·47824	·40905	·35347	·30831	·27126	51

TABLE No. I. (Continued).

Shewing the present value of £1 (or of £10, £100, or £1,000) to be received at the end of the year in which a life may be expected to die, according to the Carlisle Table of mortality.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	Years.
52	·57598	·49008	·42124	·36558	·32015	·28267	52
53	·58699	·50211	·43371	·37804	·33238	·29459	53
54	·59812	·51436	·44648	·39089	·34507	·30696	54
55	·60948	·52694	·45967	·40431	·35842	·32007	55
56	·62096	·53977	·47319	·41812	·37229	·33370	56
57	·63260	·55286	·48710	·43243	·38668	·34800	57
58	·64413	·56591	·50105	·44687	·4012[illegible]	·36252	58
59	·55512	·57833	·51433	·46062	·41514	·37644	59
60	·66531	·58987	·52667	·47336	·42803	·38926	60
61	·67436	·60007	·53752	·48445	·43922	·40036	61
62	·68325	·61012	·54824	·49549	·45027	·41133	62
63	·69222	·62033	·55914	·50676	·46165	·42259	63
64	·70157	·63103	·57067	·51875	·47389	·43481	64
65	·71112	·64203	·58262	·53126	·48664	·44763	65
66	·72103	·65347	·59510	·54440	·50012	·46133	66
67	·73122	·66539	·60824	·55832	·51451	·47593	67
68	·74168	·67770	·62186	·57287	·52969	·49141	68
69	·75246	·69043	·63605	·58809	·54565	·50793	69
70	·76340	·70349	·65067	·60389	·56234	·52519	70
71	·77465	·71701	·66595	·62053	·58000	·54371	71
72	·78525	·72979	·68043	·63638	·59687	·56134	72
73	·79483	·74136	·69357	·65075	·61225	57748	73
74	·80334	·75161	·70524	·66355	62586	·59178	74
75	·81033	·76004	·71481	·67396	·63698	·60333	75
76	·81717	·76831	·72419	·68421	·64791	·61481	76
77	·82352	·77597	.73291	·69377	·65805	·62548	77
78	.82996	·78378	·74181	·70351	·66851	·63645	78
79	·83713	·79256	·75191	·71472	·68055	·64919	79
80	·84374	·80066	·76119	·72502	·69167	·66096	80
81	·85090	·80950	·77148	·73645	·70410	·67422	81
82	·85734	·81745	·78067	·74675	·71529	·68615	82
83	·86392	·82561	·79019	·75740	·72693	·69859	83
84	·87027	·83352	·79948	·76781	·73838	·71089	84
85	·87682	·84173	·80910	·77874	·75042	72393	85
86	·88253	·84891	·81762	·78836	·76108	·73548	86
87	·88719	·85477	·82452	·79628	·76978	·74496	87
88	·89002	·85833	·82870	·80101	·77502	·75067	88
89	·89325	·86242	·83357	·80658	·79078	·75733	89
90	·80809	·86861	·84103	·81513	·79196	·76793	90
91	·89861	·86929	·84186	·81615	·78634	·76926	91
92	·89582	·86569	·83752	·81111	·77973	·76311	92
93	·89261	·86156	·83248	·80528	·77633	·75578	93
94	·89118	·85962	·83005	·80234	·77512	·75185	94
95	·89057	·85868	·82876	80064	·77424	·74941	95
96	·89212	·86047	·83071	·80268	·77626	·75126	96
97	·89633	·86569	·83676	·80936	·78352	·75904	97
98	·90132	·87184	·84391	·81734	·79216	·76822	98
99	·90880	·88127	·85500	·82996	·80609	·78326	99
100	·92185	·89797	·87505	·85306	·83193	·81163	100
101	·93511	·91500	·89562	·87689	·85875	·84133	101
102	·94842	·93224	·91653	·90128	·88650	·87207	102
103	·96144	·94921	·93728	·92562	·91417	·90304	103

in addition to this, of course, a fair proportion of the loading of the "equalized" premium for expenses of management.

For the difference between the premiums paid and the "surrender value" of the policy, the person assured has had the advantage of the continued guarantee of the sum named in his policy had he died. Fortunately he has survived, and has therefore had the satisfaction of giving instead of receiving. Surely his reward lies in his continued enjoyment of life!

The rule which Dr. Price laid down with respect to Offices, applies with equal, if not more, force to individual purchasers: "The plan of every Society ought always to be such that the losses arising from the discontinuance of payment should fall on the policy-holder, and never on the Society." The man who has to sell his policy has to sustain all the pecuniary sacrifices attending such sale. The purchaser it is only fair to expect will be on the safe side: but how is he to know when he is safe? It is the purpose of the present chapter to tell him.

In our chapter on the method of ascertaining the surplus we have already shown in detail the process which has to be gone through to ascertain the value of each individual policy. We have now to furnish the reader with the means of ascertaining the several values employed in the process.

Before coming to the actual tables necessary for this purpose we may glance at one or two considerations which naturally arise on the question. The first is, that the purchaser of a life policy, providing he is not personally acquainted with the person whose life is assured, may constantly be put to trouble and expense in order to ascertain, prior to each payment which falls due, that the assured is still alive; and, secondly, that if alive he has not trespassed beyond the limits of travel or residence prescribed by the conditions of the policy. This last condition is, if possible, the more important of the two—because the policy may thereby become absolutely forfeited; or, if not forfeited, such an additional payment may be demanded at any moment, as to render the purchase, however apparently good at the time, a ruinously bad speculation. The difficulty in proving death in such cases ought likewise not to be overlooked. On the other hand, the purchaser possesses an element of *certainty*, or of security, which (except in one or two Offices) never attached to the policy while in possession of the life assured:—viz., that when in hands of a *bonâ fide* purchaser the policy is not rendered void either by suicide, duelling, or even death by the hands of justice.[*] The chances, however, of these latter contingencies are not nearly so perilous as of those first mentioned.

On the stability of the Office in which the Assurance has been effected, and its chances of success if a young Office—or, maintaining its former rates of bonus, if an old one—some attention should also be bestowed. In a word: neither the prudential motives which may be supposed to have actuated the assured in effecting the policy nor the particular interests or connexions which led him to any particular Office, can have the slightest weight with the purchaser: hence he can only look at the matter purely as a question of profit and loss, or of his own individual security.

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[*] The question of the assignment of policies is an important one to Assurance Offices. The custom has arisen partly from competition, and partly out of a principle of the common law that a man may dispose of any property he is possessed of. The change in the condition appears essential to the assignment, although it is certainly prejudicial to the Office. An assigned policy may be forfeited by overstepping the limits of foreign travel or residence, although not by death by suicide, duelling, or the hands of justice: the assumption being, we presume, that the holder of the policy can compensate the Office for a breach of the former condition, but not of the latter ones.

The most simple method of ascertaining the value of a policy for a purchaser appears to be this. Ascertain the premium paid at the time the policy was effected, and the premium which *would have to be paid* for a policy of a like amount on the same life at its present age. An example will make the plan better understood. Assume a person to assure at age 30 for £1,000, and to pay £25 annual premium for his policy. Assume him, also, to remain assured until he reaches the age of 50, and that he then desires to sell the policy. The first step towards ascertaining the value is to ascertain the premium to be paid at age 50 for a like Assurance. This may be taken at £45 per annum. The vendor then offers to the purchaser an article which has become more valuable by £20 per annum than when he, the vendor, first obtained it. The purchaser has to ascertain the value of this £20 per annum to him during the probable existence of the policy, and calculated upon an assumption that he shall realise a certain rate of interest on the investment—say, for our present purpose, 4 per cent. This is simply done by reference to an annuity table,—the *Carlisle* 4 per cent. table being most frequently consulted in such cases; and it shows the value of an annuity on £20 on a life aged 50 to be in round numbers £257 8*s*.

This method has the approval of Professor de Morgan, who, several times refers to it in his Essay on Probabilities.[*] It does not, it will be observed, take into account either the bonus additions made to the policy, or the future premiums to be paid; and, therefore, it must be admitted that simplicity is secured somewhat at the expense of exactness.

Where the bonus additions are considerable, or where great exactness is requisite, the plan of valuation should be that given at page 291, as the mode employed in conducting the valuations for bonus; and the tables at the end of this chapter furnish the means of carrying out the process. An example or two will be useful.

As some of our readers may require to use the following process in practice we must be more exact than in the former case. In such matters, indeed, exactitude is of great moment. The profit or loss of a transaction may and frequently does depend upon this. Assume a person assured for £1,000; that he commenced the assurance at age 30, paying a premium of £25 per annum, and that on arriving at the age of 50 he has occasion to dispose of his policy. What should the

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[*] "To find the present value of a policy of Assurance, at the moment before a premium becomes due, subtract the premium which is to be paid from the premium which would be paid if the same party made the same Assurance at the present time. Find the present value of an annuity on the life of the party assured, of the same yearly amount as the preceding difference, and this value increased by one year's purchase is the present value of the policy."—*Professor de Morgan.*

TABLE III.

The present Value of *One Pound* due at the End of any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
1	·9709	·9615	·9524	·9434	·9346	·9259	·9174	·9091	1
2	·9426	·9246	·9070	·8900	·8734	·8573	·8417	·8264	2
3	·9151	·8890	·8638	·8396	·8163	·7938	·7722	·7513	3
4	·8885	·8548	·8227	·7921	·7629	·7350	·7084	·6830	4
5	·8626	·8219	·7835	·7473	·7130	·6806	·6499	·6209	5
6	·8375	·7903	·7462	·7050	·6663	·6302	·5963	·5645	6
7	·8131	·7599	·7107	·6651	·6227	·5835	·5470	·5132	7
8	·7894	·7307	·6768	·6274	·5820	·5403	·5019	·4665	8
9	·7664	·7026	·6446	·5919	·5439	·5002	·4604	·4241	9
10	·7441	·6756	·6139	·5584	·5083	·4632	·4224	·3855	10
11	·7224	·6496	·5847	·5268	·4751	·4289	·3875	·3505	11
12	·7014	·6246	·5568	·4970	·4440	·3971	·3555	·3186	12
13	·6810	·6006	·5303	·4688	·4150	·3677	·3262	·2897	13
14	·6611	·5775	·5051	·4423	·3878	·3405	·2992	·2633	14
*15	·6419	·5553	·4810	·4173	·3624	·3152	·2745	·2394	15
16	·6232	·5339	·4581	·3936	·3387	·2919	·2519	·2176	16
17	·6050	·5134	·4363	·3714	·3166	·2703	·2311	·1978	17
18	·5874	·4936	·4155	·3503	·2959	·2502	·2120	·1799	18
19	·5703	·4746	·3957	·3305	·2765	·2317	·1945	·1635	19
20	·5537	·4564	·3769	·3118	·2584	·2145	·1784	·1486	20
21	·5375	·4388	·3589	·2942	·2415	·1987	·1637	·1351	21
22	·5219	·4220	·3418	·2775	·2257	·1839	·1502	·1228	22
23	·5067	·4057	·3256	·2618	·2109	·1703	·1378	·1117	23
24	·4919	·3901	·3101	·2470	·1971	·1577	·1264	·1015	24
25	·4776	·3751	·2953	·2330	·1842	·1460	·1160	·0923	25
26	·4637	·3607	·2812	·2198	·1722	·1352	·1064	·0839	26
27	·4502	·3468	·2678	·2074	·1609	·1252	·0976	·0763	27
28	·4371	·3335	·2551	·1956	·1504	·1159	·0895	·0693	28
29	·4243	·3207	·2429	·1846	·1406	·1073	·0822	·0630	29
30	·4120	·3083	·2314	·1741	·1314	·0994	·0754	·0573	30
31	·4000	·2965	·2204	·1643	·1228	·0920	·0691	·0521	31
32	·3883	·2851	·2099	·1550	·1147	·0852	·0634	·0474	32
33	·3770	·2741	·1999	·1462	·1072	·0789	·0582	·0431	33
34	·3660	·2636	·1904	·1379	·1002	·0730	·0534	·0391	34
35	·3554	·2534	·1813	·1301	·0937	·0676	·0490	·0356	35
36	·3450	·2437	·1727	·1227	·0875	·0626	·0449	·0323	36
37	·3350	·2343	·1644	·1158	·0818	·0580	·0412	·0294	37
38	·3252	·2253	·1566	·1092	·0765	·0537	·0378	·0267	38
39	·3158	·2166	·1491	·1031	·0715	·0497	·0347	·0243	39
40	·3066	·2083	·1420	·0972	·0668	·0460	·0318	·0221	40
41	·2976	·2003	·1353	·0917	·0624	·0426	·0292	·0201	41
42	·2890	·1926	·1288	·0865	·0583	·0395	·0268	·0183	42
43	·2805	·1852	·1227	·0816	·0545	·0365	·0246	·0166	43
44	·2724	·1780	·1169	·0770	·0509	·0338	·0226	·0151	44
45	·2644	·1712	·1113	·0727	·0476	·0313	·0207	·0137	45
46	·2567	·1646	·1060	·0685	·0445	·0290	·0190	·0125	46
47	·2493	·1583	·1009	·0647	·0416	·0269	·0174	·0113	47
48	·2420	·1522	·0961	·0610	·0389	·0249	·0160	·0103	48
49	·2350	·1463	·0916	·0575	·0363	·0230	·0147	·0094	49
50	·2281	·1407	·0872	·0543	·0339	·0213	·0134	·0085	50

* *Example.*—£ due at the end of 15 years, at 3 per cent., is worth, in present money, ·6419, or 12s. 10d.—At per cent., ·5553, or 1¼d.—At 5 per cent., ·4810, or 9s. 7½d.—At 6 per cent., ·4173, or 8s. 4¼d.—At 7 per cent ·3624, or 7s. 3d.—At 8 per cent., ·3152, or 6s. 3¾d.—At 9 per cent., ·2745, or 5s. 6d.—A 10 per cent. ·2394, or 4s. 9½d.

To read the Table for £10 instead of £1, all that is required is to place the decimal point (·) one *figure to the right*; thus, £10 due at the end of 15 years, at 3 per cent., is worth, in present money, 6·419, or £6 8s. 4¼d. For £100, place the decimal point two *figures to the right.* The example would then read 64·19, or £64 3s. 10½d.

TABLE III. (Continued).

The present value of *One Pound* due at the end of any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
51	·2215	·1353	·0831	·0512	·0317	·0197	·0123	·0077	51
52	·2150	·1301	·0791	·0483	·0297	·0183	·0113	·0070	52
53	·2088	·1251	·0753	·0456	·0277	·0169	·0104	·0064	53
54	·2027	·1203	·0717	·0430	·0259	·0157	·0095	·0058	54
55	·1968	·1157	·0683	·0406	0242	·0145	·0087	·0053	55
56	·1910	·1112	·0651	·0383	·0226	·0134	·0080	·0048	56
57	·1855	·1069	·0620	·0361	·0211	·0124	·0074	·0044	57
58	·1801	·1028	·0590	0341	·0198	·0115	·0067	·0040	58
59	·1748	·0989	·0562	0321	·0185	·0107	·0062	·0036	59
60	·1697	·0951	·0535	·0303	·0173	·0099	·0057	·0033	60
61	·1648	·0914	·0510	·0286	·0161	·0091	·0052	·0030	61
62	·1600	·0879	·0486	·0270	·0151	·0085	·0048	·0027	62
63	·1553	·0845	·0462	·0255	·0141	·0078	·0044	·0025	63
64	·1508	·0813	·0440	·0240	·0132	·0073	·0040	·0022	64
65	·1464	·0781	·0419	0227	·0123	·0067	·0037	·0020	65
66	·1421	·0751	·0399	·0214	·0115	·0062	·0034	·0019	66
67	·1380	·0722	·0380	·0202	·0107	.0058	·0031	·0017	67
68	·1340	·0695	·0362	·0190	·0100	·0053	·0029	·0015	68
69	·1301	·0668	·0345	·0179	·0094	·0049	·0026	·0014	69
70	·1263	·0642	·0329	·0169	·0088	·0046	·0024	·0013	70
71	·1226	·0617	·0313	·0160	·0082	·0042	·0022	·0012	71
72	·1190	·0594	·0298	·0151	·0077	·0039	·0020	·0010	72
73	·1156	·0571	·0284	·0142	·0072	·0036	·0019	·0010	73
74	·1122	·0549	·0270	·0134	·0067	·0034	·0017	·0009	74
75	·1089	·0528	·0258	·0126	·0063	·0031	·0016	·0008	75
76	1058	·0508	·0245	·0119	·0058	·0029	·0014	·0007	76
77	·1027	·0488	·0234	·0113	·0055	·0027	·0013	·0006	77
78	·0997	·0469	·0222	·0106	·0051	·0025	·0012	·0006	78
79	·0968	·0451	·0212	·0100	·0048	·0023	·0011	·0005	79
[*]80	·0940	·0434	·0202	·0095	·0045	·0021	·0010	·0005	80[*]
81	·0912	·0417	·0192	·0089	·0042	·0020	·0009	·0004	81
82	·0886	·0401	·0183	·0084	·0039	·0018	·0009	·0004	82
83	·0860	·0386	·0174	·0079	·0036	·0017	·0008	·0004	83
84	·0835	·0371	·0166	·0075	·0034	·0016	·0007	·0003	84
85	·0811	·0357	·0158	·0071	·0032	·0014	·0007	·0003	85
86	·0787	·0343	·0151	·0067	0030	·0013	·0006	·0003	86
87	·0764	·0330	·0143	·0063	·0028	·0012	·0006	·0003	87
88	·0742	·0317	·0137	·0059	·0026	·0011	·0005	·0002	88
89	·0720	·0305	·0130	·0056	·0024	·0011	·0005	·0002	89
90	·0699	·0293	·0124	·0053	·0023	·0010	·0004	·0002	90
91	·0679	·0282	·0118	·0050	·0021	·0009	·0004	·0002	91
92	·0659	·0271	·0112	·0047	·0020	·0008	·0004	·0002	92
93	·0640	·0261	·0107	·0044	·0019	·0008	·0003	·0001	93
94	·0621	·0214	·0102	·0042	·0017	·0007	·0003	·0001	94
95	0603	·0241	·0097	·0039	·0016	·0007	·0003	·0001	95
96	·0586	·0232	·0092	·0037	·0015	·0006	·0003	·0001	96
97	·0569	·0223	·0088	·0035	·0014	·0006	·0002	·0001	97
98	·0552	·0214	·0084	·0033	·0013	·0005	·0002	·0001	98
99	·0536	·0206	·0080	·0031	·0012	·0005	·0002	·0001	99
100	·0520	·0198	·0076	·0029	·0012	·0005	·0002	·0001	100

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[*] ***Example.***—£1 due at the end of 80 years, at 3 per cent., is worth, in present money, ·0940, or 1s. 10½d.—At 4 per cent., ·0434, or 10½d. At 5 per cent., ·0202, or 5d.—At 6 per cent., ·0095, or 2¼d.—At 7 per cent., ·0045, or 1d.—At 8 per cent., ·0021, or ½d.—At 9 per cent., ·0010, or ¼d.—At 10 per cent., ·0005, or ⅛d.

TABLE IV.

The Annuity which *One Pound* will purchase for any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
1	1·0300	1·0400	1·0500	1·0600	1·0700	1·0800	1·0900	1·1000	1
2	·5226	·5302	·5378	·5454	·5531	·5608	·5685	·5762	2
3	·3535	·3603	·3672	·3741	·3811	·3880	·3951	·4021	3
4	·2690	·2755	·2820	·2886	·2952	·3019	·3087	·3155	4
5	·2184	·2246	·2310	·2374	·2439	·2505	·2571	·2638	5
6	·1846	·1908	·1970	·2034	·2098	2163	·2229	·2296	6
7	·1605	·1666	·1728	·1791	·1856	·1921	·1987	·2051	7
8	·1425	·1485	·1547	·1610	·1675	·1740	·1807	·1874	8
9	·1284	·1345	·1407	·1470	·1535	·1601	·1668	·1736	9
10	·1172	·1233	·1295	·1359	·1424	·1490	·1558	·1627	10
11	·1081	·1141	·1204	·1268	·1334	·1401	·1469	·1540	11
12	·1005	·1066	·1128	·1193	·1259	·1327	·1397	·1468	12
13	·0940	·1001	·1065	·1130	·1197	·1265	·1336	·1408	13
14	·0885	·0947	·1010	·1076	·1143	·1213	·1284	·1358	14
*15	·0837	·0899	·0963	·1030	·1098	·1168	·1241	·1315	15*
16	·0796	·0858	·0923	·0990	·1059	·1130	·1203	·1278	16
17	·0760	·0822	·0887	·0954	·1024	·1096	·1170	·1247	17
18	·0727	·0790	·0855	·0924	·0994	·1067	·1142	·1219	18
19	·0698	·0761	·0827	·0896	·0968	·1041	·1117	·1195	19
20	·0672	·0736	·0802	·0872	·0944	·1019	·1095	·1175	20
21	·0649	·0713	·0780	·0850	·0923	·0998	·1076	·1156	21
22	·0627	·0692	·0760	·0830	·0904	·0980	·1059	·1140	22
23	·0608	·0673	·0741	·0813	·0887	·0964	·1044	·1126	23
24	·0590	·0656	·0725	·0797	·0872	·0950	·1030	·1118	24
25	·0574	·0640	·0710	·0782	·0858	·0937	·1018	·1102	25
26	·0559	·0626	·0696	·0769	·0846	·0925	·1007	·1092	26
27	·0546	·0612	·0683	·0757	·0834	·0914	·0997	·1083	27
28	·0533	·0600	·0671	·0746	·0824	·0905	·0989	·1075	28
29	·0521	·0589	·0660	·0736	·0814	·0896	·0981	·1067	29
30	·0510	·0578	·0651	·0726	·0806	·0888	·0973	·1061	30
31	·0500	·0569	·0641	·0718	·0798	·0881	·0967	·1055	31
32	·0490	·0559	·0633	·0710	·0791	0875	·0961	·1050	32
33	·0482	·0551	·0625	·0703	·0784	·0869	·0956	·1045	33
34	·0473	·0543	·0618	·0696	·0778	0863	·0951	·1041	34
35	·0465	·0536	·0611	·0690	·0772	·0858	·0946	·1037	35
36	·0458	·0529	·0604	·0684	·0767	·0853	·0942	·1033	36
37	·0451	·0522	·0598	·0679	·0762	·0849	·0939	·1030	37
38	·0445	·0516	·0593	·0674	·0758	0845	·0935	·1027	38
39	·0438	·0511	·0588	·0669	·0754	·0842	·0932	·1025	39
40	·0433	·0505	·0583	.0665	·0750	·0839	·0930	·1023	40
41	·0427	·0500	·0578	.0661	·0747	0836	·0927	·1020	41
42	·0422	·0495	·0574	.0657	·0743	0833	·0925	·1019	42
43	·0417	·0491	·0570	.0653	·0740	·0830	·0923	·1017	43
44	·0412	·0487	·0566	.0650	·0738	·0828	·0921	·1015	44
45	·0408	·0483	·0563	0647	·0734	·0826	·0919	·1014	45
46	·0404	·0479	·0559	0 644	·0733	·0824	·0917	·1013	46
47	·0400	·0475	.0556	0641	·0730	·0822	·0916	·1011	47
48	·0396	·0472	·0553	0639	·0728	·0820	·0915	·1010	48
49	·0392	·0469	·0550	·0637	·0726	·0819	·0913	·1009	49
50	·0389	·0466	·0548	·0634	·0725	·0817	·0912	·1009	50

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* *Example.*—£1 will purchase an Annuity for 15 years, at 3 per cent., of ·0837 or 1*s.* 8*d.*—At 4 per cent., ·0899, or 1*s.* 9½*d.*—At 5 per cent., ·0963, or 1*s.* 11*d.*—At 6 per cent., ·1030, or 2*s* 0¾*d.*—At 7 per cent., ·1098, or 2*s.* 2¼*d.*—At 8 per cent., ·1168, or 2*s.* 4*d.*—At 9 per cent., ·1241, 2*s.* 5¾*d.*—At 10 per cent., ·1315, or 2*s* 7½*d.*

TABLE IV. (Continued.)

The Annuity which *One Pound* will purchase for any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
51	·0385	·0463	·0545	.0632	·0723	·0816	·0911	·1008	51
52	·0382	·0460	·0543	·0630	·0721	·0815	·0910	·1007	52
53	·0379	·0457	·0541	·0629	·0720	·0814	·0909	·1006	53
54	·0376	·0455	·0539	·0627	·0719	·0813	·0909	·1006	54
55	·0373	·0452	·0537	·0625	·0717	·0812	·0908	·1005	55
56	·0370	·0450	·0534	·0624	·0716	·0810	·0907	·1005	56
57	·0368	·0448	·0533	·0623	·0715	·0810	·0907	·1004	57
58	·0366	·0446	·0531	·0621	·0714	·0809	·0906	·1004	58
59	·0364	·0444	·0530	·0620	·0713	·0809	·0906	·1004	59
60	·0361	·0442	·0528	·0619	·0712	·0808	·0905	·1003	60
61	·0359	·0440	·0527	·0618	·0711	·0807	·0905	·1003	61
62	·0357	·0439	·0526	·0617	·0710	·0807	·0904	·1003	62
63	·0355	·0437	·0524	·0616	·0710	·0806	·0904	·1002	63
64	·0353	·0435	·0523	·0615	·0709	·0806	·0904	·1002	64
65	·0351	·0434	·0522	·0614	·0708	·0805	·0903	·1002	65
66	·0350	·0432	·0521	·0613	·0708	·0805	·0903	·1002	66
67	·0348	·0431	•.0520	·0612	0707	·0805	·0903	·1002	67
68	·0346	·0430	.0519	·0612	·0707	·0804	·0903	·1002	68
69	·0345	·0429	.0518	·0611	·0706	·0804	·0902	·1001	69
70	·0343	·0427	.0517	0610	·0706	·0804	·0902	·1001	70
71	·0342	·0426	.0516	·0610	·0706	·0803	·0902	·1001	71
72	·0341	·0425	.0515	·0609	·0705	·0803	·0902	·1001	72
73	·0339	·0424	.0515	·0609	·0705	·0803	·0902	·1001	73
74	·0338	·0423	.0514	·0608	·0705	·0803	·0902	·1001	74
75	·0337	·0422	.0513	·0608	·0704	·0802	·0901	·1001	75
76	·0335	·0421	.0513	·0607	·0704	·0802	·0901	·1001	76
77	·0334	·0421	.0512	·0607	·0704	·0802	·0901	·1001	77
78	·0333	·0420	.0511	·0606	·0704	·0802	·0901	·1001	78
79	·0332	·0419	.0511	·0606	·0703	·0802	·0901	·1001	79
80	·0331	·0418	.0510	·0606	·0703	·0802	·0901	·1000	80
81	·0330	·0417	.0510	·0605	·0703	·0802	·0901	·1000	81
82	·0329	·0417	.0509	·0605	·0703	·0801	·0901	·1000	82
83	·0328	·0416	.0509	·0605	·0703	·0801	·0901	·1000	83
84	·0327	·0415	.0508	·0605	•·0702	·0801	·0901	·1000	84
85	·0326	·0415	.0508	·0604	·0702	·0801	·0901	·1000	85
86	·0326	·0414	.0508	·0604	·0702	·0801	·0901	·1000	86
87	·0325	·0414	.0507	·0604	·0702	0801	·0900	·1000	87
88	·0324	·0413	.0507	·0604	·0702	·0801	·0900	·1000	88
89	·0323	·0413	.0507	·0603	·0702	·0801	·0900	·1000	89
90	·0323	·0412	.0506	·0603	·0702	·0801	·0900	·1000	90
91	·0322	·0412	.0506	·0603	·0701	·0801	·0900	·1000	91
92	·0321	·0411	.0506	·0603	·0701	·0801	·0900	·1000	92
93	·0321	·0411	.0505	·0603	·0701	0801	·0900	·1000	93
94	·0320	·0410	.0505	·0603	·0701	·0801	·0900	·1000	94
95	·0319	·0410	.0505	·0602	·0701	·0801	·0900	·1000	95
96	·0319	.0409	.0505	·0602	·0701	·0801	·0900	·1000	96
97	·0318	·0409	.0504	·0602	·0701	·0801	·0900	·1000	97
98	·0318	·0409	.0504	·0602	·0701	·0801	0900	·1000	98
99	·0317	.0408	.0504	·0602	·0701	·0801	·0900	·1000	99
100	·0316	·0408	.0504	·0602	·0701	·0801	·0900	·1000	100
Perpetuity.	·0300	0·400	·0500	·0600	·0700	·0800	·0900	·1000	Perpetuity.

• *Example.*—£1 will purchase an annuity for 70 years of (3 per cent.) ·0343, or 8¼d.—At 4 per cent. of 0·427, or 10¼d.—At 5 per cent. of ·0517, or 1s. 0½d.—At 6 per cent. of ·0610, or 1s. 2¾d —At 7 per cent. of ·0706, or 1s. 5d.—At 8 per cent. of ·0804, or 1s. 7¼d.—At 9 per cent. of ·0902, or 1s. 9¾d.—At 10 per cent. of ·1001, or 2s.

TABLE No. V.

The amount of *One Pound* for any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	8 per Cent.	10 per Cent.	Years.
1	1·0300	1·0400	1·0500	1·0600	1·0800	1·1000	1
2	1·0609	1·0816	1·1025	1·1236	1·1664	1·2100	2
3	1·0927	1·1249	1·1576	1·1910	1·2597	1·3310	3
4	1·1255	1·1699	1·2155	1·2625	1·3605	1·4641	4
5	1·1593	1·2167	1·2763	1·3382	1·4693	1·6105	5
6	1·1941	1·2653	1·3401	1·4185	1·5869	1·7716	6
7	1·2299	1·3159	1·4071	1·5036	1·7138	1·9487	7
8	1·2668	1·3686	1·4775	1·5938	1·8509	2·1436	8
9	1·3048	1·4233	1·5513	1·6895	1·9990	2·3579	9
10	1·3439	1·4802	1·6289	1·7908	2·1589	2·5937	10
11	1·3842	1·5395	1·7103	1·8983	2·3316	2·8531	11
12	1·4258	1·6010	1·7959	2·0122	2·5182	3·1384	12
13	1·4685	1·6651	1·8856	2·1329	2·7196	3·4523	13
14	1·5126	1·7317	1·9799	2·2609	2·9372	3·7975	14
*15	1·5580	1·8009	2·0789	2·3966	3·1722	4·1773	15*
16	1·6047	1·8730	2·1829	2·5404	3·4259	4·5950	16
17	1·6528	1·9479	2·2920	2·6928	3·7000	5·0545	17
18	1·7024	2·0258	2·4066	2·8543	3·9960	5·5599	18
19	1·7535	2·1068	2·5270	3·0256	4·3157	6·1159	19
20	1·8061	2·1911	2·6533	3·2071	4·6610	6·7274	20
21	1·8603	2·2788	2·7860	3·3996	5·0338	7·4002	21
22	1·9161	2·3699	2·9253	3·6035	5·4365	8·1403	22
23	1·9736	2·4647	3·0715	3·8197	5·8715	8·9543	23
24	2·0328	2·5633	3·2251	4·0489	6·3412	9·8497	24
25	2·0938	2·6658	3·3864	4·2919	6·8485	10·8347	25
26	2·1566	2·7725	3·5557	4·5494	7·3964	11·9182	26
27	2·2213	2·8834	3·7335	4·8223	7·9881	13·1100	27
28	2·2879	2·9987	3·9202	5·1117	8·6271	14·4210	28
29	2·3566	3·1187	4·1162	5·4184	9·3173	15·8631	29
30	2·4273	3·2434	4·3219	5·7435	10·0627	17·4494	30
31	2·5001	3·3731	4·5380	6·0881	10·8677	19·1943	31
32	2·5751	3·5081	4·7649	6·4534	11·7371	21·1138	32
33	2·6523	3·6484	5·0032	6·8406	12·6761	23·2252	33
34	2·7319	3·7943	5·2533	7·2511	13·6902	25·5477	34
35	2·8139	3·9461	5·5160	7·6861	14·7853	28·1024	35
36	2·8983	4·1039	5·7918	8·1473	15·9682	30·9127	36
37	2·9852	4·2681	6·0814	8·6368	17·2456	34·0039	37
38	3·0748	4·4388	6·3855	9·1543	18·6253	37·4043	38
39	3·1670	4·6164	6·7048	9·7035	20·1153	41·1448	39
40	3·2620	4·8010	7·0400	10·2857	21·7245	45·2593	40
41	3·3599	4·9931	7·3920	10·9029	23·4625	49·7852	41
42	3·4607	5·1928	7·7616	11·5570	25·3395	54·7637	42
43	3·5645	5·4005	8·1497	12·2505	27·3666	60·2401	43
44	3·6715	5·6165	8·5572	12·9855	29·5560	66·2641	44
45	3·7816	5·8411	8·9850	13·7646	31·9204	72·8905	45
46	3·8950	6·0748	9·4343	14·5905	34·4741	80·1795	46
47	4·0119	6·3178	9·9060	15·4659	37·2320	88·1975	47
48	4·1323	6·5705	10·4013	16·3939	40·2106	97·0172	48
49	4·2562	6·8333	10·9213	17·3775	43·4274	106·7190	49
50	4·3839	7·1067	11·5674	18·4202	46·9016	117·3909	50

* *Example.*—£1 in 15 years, at 3 per cent., will amount to 1·5580, or £1 11*s.* 2*d.*—At 4 per cent., 1·8009, or £1 16*s.*—At 5 per cent., 2·0789, or £2 1*s.* 7*d.*—At 6 per cent., 2·3966, or £2 7*s.* 11*d.*—At 7 per cent., 2·7590, or £2 15*s.* 2*d.*—At 8 per cent., 3·1722, or £3 3*s.* 5*d.*—At 9 per cent., 3·6425, or £3 12*s.* 10*d.*—At 10 per cent., 4·1773, or £4 3*s.* 6*d.*

TABLE No. V. (Continued.)

The amount of *One Pound* for any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	8 per Cent.	10 per Cent.	Years.
51	4·5154	7·3910	12·0408	19·5254	50·6537	129·1299	51
52	4·6509	7·6866	12·6428	20·6969	54·7060	142·0429	52
53	4·7904	7·9941	13·2749	21·9387	59·0825	156·2472	53
54	4·9341	8·3138	13·9387	23·2550	63·8091	171·8719	54
55	5·0821	8·6464	14·6356	24·6503	68·9139	189·0591	55
56	5·2346	8·9922	15·3674	26·1293	74·4270	207·9651	56
57	5·3917	8·3519	16·1358	27·6971	80·3811	228·7616	57
58	5·5534	9·7260	16·9426	29·3589	86·8116	251·6377	58
59	5·7200	10·1150	17·7897	31·1205	93·7565	276·8015	59
60	5·8916	10·5196	18·6792	32·9877	101·2571	304·4816	60
61	6·0684	10·9404	19·6131	34·9670	109·3576	334·9298	61
62	6·2504	11·3780	20·5938	37·0650	118·1062	368·4228	62
63	6·4379	11·8332	21·6235	39·2889	127·5547	405·2651	63
64	6·6311	12·3065	22·7047	41·6462	137·7591	445·7916	64
65	6·8300	12·7987	23·8399	44·1450	148·7798	490·3707	65
66	7·0349	13·3107	25·0319	46·7937	160·6822	539·4078	66
67	7·2460	13·8431	26·2835	49·6013	173·5368	593·3486	67
68	7·4633	14·3968	27·5977	52·5774	187·4198	652·6834	68
69	7·6872	14·9727	28·9775	55·7320	202·4133	717·9518	69
70	7·9178	15·5716	30·4264	59·0759	218·6064	789·7470	70
71	8·1554	16·1945	31·9477	62·6205	236·0949	868·7217	71
72	8·4000	16·8423	33·5451	66·3777	254·9825	955·5938	72
73	8·6520	17·5160	35·2224	70·3604	275·3811	1051·1532	73
74	8·9116	18·2166	36·9835	74·5820	297·4116	1156·2685	74
75	9·1789	18·9453	38·8327	79·0569	321·2045	1271·8954	75
76	9·4543	19·7031	40·7743	83·8003	346·9009	1399·0849	76
77	9·7379	20·4912	42·8130	88·8284	374·6530	1538·9934	77
78	10·0301	21·3108	44·9537	94·1581	404·6252	1692·8927	78
79	10·3310	22·1633	47·2014	99·8075	436·9952	1862·1820	79
80	10·6409	23·0498	49·5614	105·7960	471·9548	2048·4002	80
81	10·9601	23·9718	52·0395	112·1438	509·7112	2253·2402	81
82	11·2889	24·9307	54·6415	118·8724	550·4881	2478·5643	82
83	11·6276	25·9279	57·3736	126·0047	594·5272	2726·4207	83
84	11·9764	26·9650	60·2422	133·5650	642·0893	2999·0628	84
85	12·3357	28·0436	63·2544	141·5789	693·4565	3298·9690	85
86	12·7058	29·1653	66·4171	150·0736	748·9330	3628·8659	86
87	13·0870	30·3320	69·7379	159·0781	808·8476	3991·7525	87
88	13·4796	31·5452	73·2248	168·6227	873·5555	4390·9278	88
89	13·8839	32·8071	76·8861	178·7401	943·4399	4830·0206	89
90	14·3005	34·1193	80·7304	189·4645	1018·9154	5313·0226	90
91	14·7295	35·4841	84·7669	200·8324	1100·4283	5844·3249	91
92	15·1714	36·9035	89·0052	212·8823	1188·4626	6428·7574	92
93	15·6265	38·3796	93·4555	225·6553	1283·5396	7071·6331	93
94	16·0953	39·9148	98·1283	239·1946	1386·2227	7778·7964	94
95	16·5782	41·5114	103·0347	253·5463	1497·1205	8556·6760	95
96	17·0755	43·1718	108·1864	268·7590	1616·8902	9412·3437	96
97	17·5878	44·8987	113·5957	284·8846	1746·2414	10353·578	97
98	18·1154	46·6947	119·2755	301·9776	1885·9407	11388·936	98
99	18·6589	48·5625	125·2393	320·0963	2036·8160	12527·829	99
100	19·2186	50·5049	131·5013	339·3021	2199·7613	13780·612	100

* *Example*—£1 accumulated for 70 years, at 3 per cent. compound interest
7·9178, or £7 18s. 4¼d.; at 4 per cent. to 15·5716, or £15 11s. 5¼d.: at
£59 1s. 6d.; at 8 per cent. to 202·4133, or £202 8s. 4¼d.; or at
£789 14s. 11¼d.

TABLE VI.

The amount of *One Pound per Annum* in any number of years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	8 per Cent.	10 per Cent.	Years.
1	1·0000	1·0000	1·0000	1·0000	1·0000	1·0000	1
2	2·0300	2·0400	2·0500	2·0600	2·0800	2·1000	2
3	3·0909	3·1216	3·1525	3·1836	3·2464	3·3100	3
4	4·1836	4·2464	4·3101	4·3746	4·5061	4·6410	4
5	5·3091	5·4163	5·5256	5·6371	5·8666	6·1051	5
6	6·4684	6·6330	6·8019	6·9753	7·3359	7·7156	6
7	7·6625	7·8983	8·1420	8·3938	8·9228	9·4872	7
8	8·8923	9·2142	9·5491	9·8975	10·6366	11·4359	8
9	10·1591	10·5828	11·0266	11·4913	12·4876	13·5795	9
10	11·4638	12·0061	12·5779	13·1808	14·4866	15·9374	10
11	12·8078	13·4864	14·2068	14·9716	16·6455	18·5312	11
12	14·1920	15·0253	15·9171	16·8699	18·9771	21·3843	12
13	15·6178	16·6268	17·7130	18·8821	21·4952	24·5227	13
14	17·0863	18·2919	19·5986	21·0151	24·2149	27·9750	14
*15	18·5989	20·0236	21·5786	23·2760	27·1521	31·7725	15*
16	20·1569	21·8245	23·6575	25·6725	30·3243	35·9497	16
17	21·7616	23·6975	25·8403	28·2129	33·7502	40·5447	17
18	23·4144	25·6454	28·1324	30·9057	37·4502	45·5992	18
19	25·1169	27·6712	30·5390	33·7600	41·4463	51·1591	19
20	26·8704	29·7781	33·0660	36·7856	45·7620	57·2750	20
21	28·6765	31·9692	35·7193	39·9927	50·4229	64·0025	21
22	30·5368	34·2480	38·5052	43·3923	55·4568	71·4027	22
23	32·4529	36·6179	41·4305	46·9958	60·8963	79·5430	23
24	34·4265	39·0826	44·5020	50·8156	66·7648	88·4973	24
25	36·4593	41·6459	47·7271	54·8645	73·1059	98·3471	25
26	38·5530	44·3117	51·1135	59·1564	79·9544	109·1818	26
27	40·7096	47·0842	54·6691	63·7058	87·3508	121·0999	27
28	42·9309	49·9676	58·4026	68·5281	95·3388	134·2099	28
29	45·2189	52·9663	62·3227	73·6398	103·9659	148·6309	29
30	47·5754	56·0849	66·4388	79·0582	113·2832	164·4940	30
31	50·0027	59·3283	70·7608	84·8017	123·3459	181·9434	31
32	52·5028	62·7015	75·2988	90·8898	134·2135	201·1378	32
33	55·0778	66·2095	80·0638	97·3432	145·9506	222·2515	33
34	57·7302	69·8579	85·0670	104·1838	158·6267	245·4767	34
35	60·4621	73·6522	90·3203	111·4348	172·3168	271·0244	35
36	63·2759	77·5983	95·8363	119·1209	187·1021	299·1268	36
37	66·1742	81·7022	101·6281	127·2681	203·0703	330·0395	37
38	69·1594	85·9703	107·7095	135·9042	220·3159	364·0434	38
39	72·2342	90·4091	114·0950	145·0585	238·9412	401·4478	39
40	75·4012	95·0255	120·7998	154·7620	259·0565	442·5926	40
41	78·6633	99·8265	127·8398	165·0477	280·7810	487·8518	41
42	82·0232	104·8195	135·2318	175·9505	304·2435	537·6370	42
43	85·4839	110·0124	142·9933	187·5075	329·5830	592·4007	43
44	89·0484	115·4129	151·1430	199·7580	356·9496	652·6408	44
45	92·7199	121·0294	159·7002	212·7435	386·5056	718·9048	45
46	96·5015	126·8706	168·6852	226·5081	418·4261	791·7953	46
47	100·3965	132·9454	178·1194	241·0986	452·9002	871·9749	47
48	104·4084	139·2632	188·0254	256·5645	490·1322	960·1723	48
49	108·5406	145·8337	198·4267	272·9584	536·3427	1057·1896	49
50	112·7969	152·6671	209·3480	290·3359	573·7702	1163·9085	50

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* *Example*—£1 per annum, in 15 years, at 3 per cent., will amount to 18·5989, or £18 11s 11¾d—At 4 per cent., 20·0236, or £20 0s. 5¾d.—At 5 per cent., 21·5786, or £21 11s. 6¾d.—At 6 per cent. 23·2760, or £23 5s. 6¼d.—At 8 per cent., 27·1521, or £27 3s. 0½d.—At 10 per cent. 31·7725 or £31 15s. 5½d.

TABLE VI. (Continued).

The amount of *One Pound per Annum* in any number of years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	8 per Cent.	10 per Cent.	Years.
51	117·1808	159·7738	220·8154	308 7561	620·6718	1281·2994	51
52	121·6962	167·1647	232·8562	328 2814	671·3255	1410·4293	52
53	126·3471	174·8513	245·4990	348·9783	726·0316	1552·4723	53
54	131·1375	182·8454	258·7739	370·9170	785·1141	1708·7195	54
55	136·0716	191·1592	272·7126	394·1720	848·9232	1880·5914	55
56	141·1538	199·8055	287·3482	418·8223	917·8371	2069·6506	56
57	146·3884	208·7978	302·7157	444·9517	992·2640	2277·6156	57
58	151·7800	218·1497	318·8514	472·6488	1072·6451	2506·3772	58
59	157·3334	227·8757	335·7940	502·0077	1159·4568	2758 0149	59
60	163·0534	237·9907	353·5837	533·1282	1253·2133	3034·8164	60
61	168·9450	248·5103	372·2629	566·1159	1354·4704	3339·2980	61
62	175·0134	259·4507	391·8760	601·0828	1463·8280	3674·2278	62
63	181·2638	270·8288	412·4699	638·1478	1581·9342	4042·6506	63
64	187·7017	282·6619	434·0933	677·4367	1709·4889	4447·9157	64
65	194·3328	294·9684	456·7980	719·0829	1847·2481	4893·7073	65
66	201·1627	307·7671	480·6379	763·2278	1996·0279	5384·0780	66
67	208·1976	321·0778	505·6698	810·0215	2156·7102	5923·4858	67
68	215·4436	334·9209	531·9533	859·6228	2330·2470	6516·8344	68
69	222·9069	349·3177	559·5510	912·2002	2517 6667	7169·5178	69
*70	230·5941	364·2905	588·5285	967·9322	2720 0801	7887·4696	70
71	238·5119	379·8621	618·9549	1027·0081	2938·686	8677·217	71
72	246·6672	396·0566	650·9027	1089·6285	3174·781	9545·938	72
73	255·0673	412·8988	684·4478	1156·0063	3429 764	10501·532	73
74	263·7193	430·4148	719·6702	1226·3667	3705·145	11552·685	74
75	272·6309	448·6314	756·6537	1300·9487	4002 557	12708·954	75
76	281·8098	467·5766	795·4864	1380·0056	4323·761	13980 849	76
77	291·2641	487·2797	836·2607	1463·8059	4670·662	15379·934	77
78	301·0020	507·7709	879·0738	1552·6343	5045 315	16918·927	78
79	311·0321	529·0817	924·0274	1646·7924	5449·940	18611·820	79
80	321·3630	551·2450	971·2288	1746·5999	5886·935	20474·002	80
81	332·0039	574·2948	1020·7903	1852·3959	6358·890	22522·402	81
82	342·9640	598·2666	1072·8298	1964·5396	6868·601	24775·643	82
83	354·2529	623·1972	1127·4713	2083·4120	7419 090	27254·207	83
84	365·8805	649·1251	1184·8448	2209·4167	8013·617	29980·628	84
85	377 8570	676·0901	1245·0871	2342·9817	8655·706	32979·690	85
86	390·1927	704·1337	1308·3414	2484·5606	9349 163	36278·659	86
87	402·8984	733·2991	1374·7585	2634·6343	10098 096	39907 525	87
88	415·9854	763·6310	1444·4964	2793·7123	10906·943	43899·277	88
89	429·4650	795·1763	1517·7212	2962·3351	11780 499	48290·206	89
90	443·3489	827·9833	1594·6073	3141·0752	12723 939	53120 226	90
91	457·6494	862·1027	1675·3377	3330·5397	13748·854	58433·249	91
92	472·3789	897·5868	1760 1045	3531·3721	14843·282	64277 574	92
93	487·5502	934·4992	1849·1098	3744·2544	16031·745	70706 331	93
94	503·1767	972·8699	1942·5653	3969·9097	17315 284	77777·964	94
95	519·2720	1012·7846	2040·6935	4209·1042	18701·507	85556·760	95
96	535·8502	1054·2960	2143·7282	4462·6505	20198·627	94113·437	96
97	552·9257	1097·4679	2251·9146	4731·4095	21815·518	103525·780	97
98	570·5135	1142·3666	2365·5103	5016·2941	23561·759	113879 358	98
99	588·6289	1189·0613	2484·7859	5318 2718	25447·700	125268·294	99
100	607·2877	1237·6237	2610·0252	5638·3681	27484·516	137796 123	100

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* *Example.*—£1 per annum accumulated for 70 years, at 3 per cent., will amount to 230·5941, or £230 11s. 10½d.—At 4 per cent. to 364·2905, or £364 5s. 10d.—At 5 per cent. to 588·5285, or £588 10s. 7d.—At 6 per cent. to 967·9322, or £967 18s. 8d.—At 8 per cent. to 2720·0801 — £2,720 1s. 7¼d.—At 10 per cent. to 7887·4696, or £7,887 9s. 4½d.

TABLE VII.

The present Value of *One Pound per Annum* for any Number of Years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
½	·4890	·4855	·4820	·4786	·4752	·4719	·4686	·4654	½
1	·9709	·9615	·9524	·9434	·9346	·9259	·9174	·9091	1
1½	1·4457	1·4283	1·4114	1·3949	1·3787	1·3628	1·3473	1·3322	1½
2	1·9135	1·8861	1·8594	1·8334	1·8080	1·7833	1·7591	1·7355	2
2½	2·3744	2·3350	2·2966	2·2593	2·2231	2·1878	2·1535	2·1201	2½
3	2·8286	2·7751	2·7232	2·6730	2·6243	2·5771	2·5313	2·4869	3
3½	3·2761	3·2067	3·1396	3·0748	3·0122	2·9517	2·8931	2·8365	3½
4	3·7171	3·6299	3·5460	3·4651	3·3872	3·3121	3·2397	3·1699	4
4½	4·1516	4·0449	3·9425	3·8442	3·7497	3·6590	3·5717	3·4877	4½
5	4·5797	4·4518	4·3295	4·2124	4·1002	3·9927	3·8897	3·7908	5
5½	5·0015	4·8509	4·7071	4·5700	4·4390	4·3139	4·1942	4·0797	5½
6	5·4172	5·2421	5·0757	4·9173	4·7665	4·6229	4·4859	4·3553	6
6½	5·8267	5·6258	5·4354	5·2547	5·0832	4·9202	4·7653	4·6180	6½
7	6·2303	6·0021	5·7864	5·5824	5·3893	5·2064	5·0330	4·8684	7
7½	6·6279	6·3710	6·1289	5·9007	5·6852	5·4817	5·2893	5·1072	7½
8	7·0197	6·7327	6·4632	6·2098	5·9713	5·7466	5·5348	5·3349	8
8½	7·4057	7·0875	6·7894	6·5101	6·2479	6·0016	5·7700	5·5520	8½
9	7·7861	7·4353	7·1078	6·8017	6·5152	6·2469	5·9952	5·7590	9
9½	8·1609	7·7764	7·4185	7·0850	6·7737	6·4829	6·2110	5·9564	9½
10	8·5302	8·1109	7·7217	7·3601	7·0236	6·7101	6·4177	6·1446	10
10½	8·8941	8·4389	8·0176	7·6273	7·2651	6·9286	6·6156	6·3240	10½
11	9·2526	8·7605	8·3064	7·8869	7·4987	7·1390	6·8052	6·4951	11
11½	9·6059	9·0759	8·5882	8·1390	7·7244	7·3413	6·9868	6·6582	11½
12	9·9540	9·3851	8·8633	8·3838	7·9427	7·5361	7·1607	6·8137	12
12½	10·2970	9·6883	9·1316	8·6217	8·1537	7·7235	7·3273	6·9620	12½
13	10·6350	9·9856	9·3936	8·8527	8·3577	7·9038	7·4869	7·1034	13
13½	10·9680	10·2772	9·6492	9·0771	8·5548	8·0773	7·6398	7·2382	13½
14	11·2961	10·5631	9·8986	9·2950	8·7455	8·2442	7·7862	7·3667	14
14½	11·6194	10·8435	10·1421	9·5067	8·9298	8·4049	7·9264	7·4892	14½
*15	11·9379	11·1184	10·3797	9·7122	9·1079	8·5595	8·0607	7·6061	*15
15½	12·2518	11·3880	10·6115	9·9119	9·2801	8·7082	8·1893	7·7175	15½
16	12·5611	11·6523	10·8378	10·1059	9·4466	8·8514	8·3126	7·8237	16
16½	12·8658	11·9115	11·0586	10·2943	9·6076	8·9891	8·4306	7·9250	16½
17	13·1661	12·1657	11·2741	10·4773	9·7633	9·1216	8·5436	8·0216	17
17½	13·4620	12·4149	11·4844	10·6550	9·9137	9·2492	8·6519	8·1136	17½
18	13·7535	12·6593	11·6896	10·8276	10·0591	9·3719	8·7556	8·2014	18
18½	14·0408	12·8989	11·8899	10·9953	10·1997	9·4900	8·8550	8·2851	18½
19	14·3238	13·1339	12·0853	11·1581	10·3356	9·6036	8·9501	8·3649	19
19½	14·6027	13·3644	12·2761	11·3163	10·4670	9·7129	9·0413	8·4410	19½
20	14·8775	13·5903	12·4622	11·4699	10·5940	9·8181	9·1285	8·5136	20
20½	15·1482	13·8119	12·6439	11·6191	10·7168	9·9194	9·2122	8·5827	20½
21	15·4150	14·0292	12·8212	11·7641	10·8355	10·0168	9·2922	8·6487	21
21½	15·6779	14·2422	12·9942	11·9049	10·9503	10·1105	9·3690	8·7116	21½
22	15·9369	14·4511	13·1630	12·0416	11·0612	10·2007	9·4424	8·7715	22
22½	16·1921	14·6560	13·3278	12·1744	11·1685	10·2875	9·5128	8·8287	22½
23	16·4436	14·8568	13·4886	12·3034	11·2722	10·3711	9·5802	8·8832	23
23½	16·6914	15·0538	13·6455	12·4287	11·3724	10·4514	9·6448	8·9352	23½
24	16·9355	15·2470	13·7986	12·5504	11·4693	10·5288	9·7066	8·9847	24
24½	17·1761	15·4364	13·9481	12·6686	11·5630	10·6032	9·7658	9·0320	24½
25	17·4131	15·6221	14·0939	12·7834	11·6536	10·6748	9·8226	9·0770	25

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* *Example.*—£1 per annum, for 15 years, at 3 per cent., is worth, in present money, 11·9379, or £11 18s. 9d.—At 4 per cent., 11·1184, or £11 2s. [illegible]d.—At 5 per cent., 10·3797, or £10 7s. 7d.—At 6 per cent., 9·7122, or £9 14s. 3d.—At 7 per cent., 9·1079, or £9 2s. 1¾d.—At 8 per cent., 8·5595, or £8 11s. 2¼d.—At 9 per cent., 8·0607, or £8 1s. 2½d.—At 10 per cent., 7·6061, or £7 12s. 1½d.

TABLE VII. (Continued).

The present value of *One Pound per Annum* for any number of years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
25½	17·6467	15·8042	14·2363	12·8949	11·7411	10·7437	9·8769	9·1200	25½
26	17·8768	15·9828	14·3752	13·0032	11·8258	10·8100	9·9290	9·1609	26
26½	18·1036	16·1579	14·5107	13·1084	11·9076	10·8738	9·9788	9·2000	26½
27	18·3270	16·3296	14·6430	13·2105	11·9867	10·9352	10·0266	9·2372	27
27½	18·5472	16·4980	14·7721	13·3098	12·0632	10·9942	10·0723	9·2777	27½
28	18·7641	16·6631	14·8981	13·4062	12·1371	11·0511	10·1161	9·3066	28
28½	18·9778	16·8250	15·0211	13·4998	12·2086	11·1058	10·1581	9·3388	28½
29	19·1885	16·9837	15·1411	13·5907	12·2777	11·1584	10·1983	9·3696	29
29½	19·3960	17·1394	15·2582	13·6790	12·3445	11·2091	10·2368	9·3989	29½
*30	19·6004	17·2920	15·3725	13·7648	12·4090	11·2578	10·2737	9·4269	*30
30½	19.8019	17·4417	15·4840	13·8482	12·4715	11·3047	10·3090	9·4536	30½
31	20.0004	17·5885	15·5928	13·9291	12·5318	11·3498	10·3428	9·4790	31
31½	20·1960	17·7324	15·6990	14·0077	12·5902	11·3932	10·3752	9·5033	31½
32	20·3888	17·8736	15·8027	14·0840	12.6466	11·4350	10·4062	9·5264	32
32½	20·5787	18·0119	15·9038	14·1582	12·7011	11·4752	10·4360	9·5484	32½
33	20·7658	18·1476	16·0025	14·2302	12·7538	11·5139	10·4644	9·5694	33
33½	20.9502	18·2807	16·0989	14·3002	12·8047	11·5511	10·4918	9·5895	33½
34	21·1318	18·4112	16·1929	14·3681	12·8540	11·5869	10·5178	9·6086	34
34½	21·3108	18·5391	16·2847	14·4341	12·9016	11·6214	10·5429	9·6268	34½
35	21·4872	18·6646	16·3742	14·4982	12·9477	11·6546	10·5668	9·6442	35
35½	21·6610	18·7876	16·4616	14·5605	12·9922	11·6865	10·5898	9·6607	35½
36	21·8323	18·9083	16·5469	14·6210	13·0352	11·7172	10·6118	9·6765	36
36½	22·0010	19·0266	16·6301	14·6797	13·0768	11·7467	10·6328	9·6916	36½
37	22·1672	19·1426	16·7113	14·7368	13·1170	11·7752	10·6530	9·7059	37
37½	22·3311	19·2563	16·7905	14·7922	13·1559	11·8025	10·6723	9·7196	37½
38	22·4925	19·3679	16·8679	14·8460	13·1935	11·8289	10·6908	9·7327	38
38½	22·6515	19·4772	16·9434	14·8983	13·2298	11·8542	10·7085	9·7451	38½
39	22·8082	19·5845	17·0170	14·9491	13·2649	11·8786	10·7255	9·7570	39
39½	22·9626	19·6897	17·0889	14·9984	13·2989	11·9020	10·7418	9·7683	39½
40	23·1148	19·7928	17·1591	15·0463	13·3317	11·9246	10·7574	9·7791	40
40½	23·2647	19·8939	17·2276	15·0928	13·3634	11·9463	10·7723	9·7893	40½
41	23·4123	19·9931	17·2944	15·1380	13·3941	11·9672	10·7866	9·7991	41
41½	23·5579	20·0903	17·3596	15·1819	13·4238	11·9874	10·8003	9·8085	41½
42	23·7014	20·1856	17·4232	15·2245	13·4524	12·0067	10·8134	9·8174	42
42½	23·8427	20·2792	17·4853	15·2660	13·4802	12·0253	10·8259	9·8259	42½
43	23·9819	20·3708	17·5459	15·3062	13·5070	12·0432	10·8380	9·8340	43
43½	24·1191	20·4607	17·6051	15·3452	13·5329	12·0605	10·8495	9·8417	43½
44	24·2543	20·5488	17·6628	15·3832	13·5579	12·0771	10·8605	9·8491	44
44½	24·3875	20·6353	17·7191	15·4200	13·5821	12·0930	10·8711	9·8561	44½
45	24·5187	20·7200	17·7741	15·4558	13·6055	12·1084	10·8812	9·8628	45
45½	24·6480	20·8032	17·8277	15·4906	13·6281	12·1232	10·8909	9·8692	45½
46	24·7754	20·8847	17·8801	15·5244	13·6500	12·1374	10·9002	9·8753	46
46½	24·9010	20·9646	17·9312	15·5572	13·6712	12·1511	10·9091	9·8811	46½
47	25·0247	21·0429	17·9810	15·5890	13·6916	12·1643	10·9176	9·8866	47
47½	25·1466	21·1198	18·0297	15·6200	13·7114	12·1769	10·9258	9·8919	47½
48	25·2667	21·1951	18·0772	15·6500	13·7305	12·1891	10·9336	9·8969	48
48½	25·3850	21·2690	18·1235	15·6792	13·7489	12·2009	10·9411	9·9017	48½
49	25·5017	21·3415	18·1687	15·7076	13·7668	12·2122	10·9482	9·9063	49
49½	25 6166	21·4125	18·2129	15·7351	13·7841	12·2230	10·9551	9·9107	49½
50	25·7298	21·4822	18·2559	15·7619	13·8007	12·2335	10·9617	9·9148	50
50½	25·8413	21·5505	18·2980	15·7878	13·8169	12·2435	10·9680	9·9188	50½

* *Example.*—£1 per annum, for 30 years, at 3 per cent., is worth in present money 19.6004, or £19 12*s.*—At 4 per cent., 17.2920, or £17 5*s.* 10*d.*—At 5 per cent., 15.3725, or £15 7*s.* 6*d.*—At 6 per cent., 13.7648, or £13 15*s.* 4*d.*—At 7 per cent., 12.4090, or £12 8*s.* 2*d.*—At 8 per cent., 11.2578, or £11 5*s.* 2*d.*—At 9 per cent., 10.2737, or £10 5*s.* 6*d.*—At 10 per cent., 9.4269, or £9 8*s.* 6*d.*

TABLE VII. (Continued).

The present value of *One Pound per Annum* for any number of years.

Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
51	25·9512	21·6175	18·3390	15·8131	13·8325	12·2532	10·9740	9·9226	51
52	26·1662	21·7476	18·4181	15·8614	13·8621	12·2715	10·9853	9·9296	52
53	26·3754	21·8727	18·4934	15·9070	13·8898	12·2884	10·9957	9·9360	53
54	26·5777	21·9930	18·5651	15·9500	13·9157	12·3041	11·0053	9·9418	54
55	26·7744	22·1086	18·6335	15·9905	13·9399	12·3186	11·0140	9·9471	55
56	26·9655	22·2198	18·6985	16·0288	13·9626	12·3320	11·0220	9.9519	56
57	27·1509	22·3267	18·7605	16·0649	13·9837	12·3445	11·0294	9·9563	57
58	27·3310	22·4296	18·8195	16·0990	14·0035	12·3560	11·0361	9·9603	58
59	27·5058	22·5284	18.8758	.6·1311	14·0219	12·3667	11·0423	9.9639	59
*60	27·6756	22·6235	18·9293	16·1614	14·0392	12·3766	11·0480	9·9672	60*
61	27·8404	22·7149	18·9803	16·1900	14·0553	12·3857	11·0532	9·9701	61
62	28·0003	22·8029	19·0288	16·2170	14·0704	12·3942	11·0580	9·9729	62
63	28·1557	22·8873	19·0751	16·2425	14·0845	12·4020	11·0624	9·9753	63
64	28·3065	22·9685	19·1191	16·2665	14·0976	12·4093	11·0664	9·9776	64
65	28·4529	23·0467	19·1611	16·2891	14·1099	12·4160	11·0701	9·9796	65
66	28·5950	23·1218	19·2010	16·3105	14·1214	12·4222	11·0735	9·9815	66
67	28·7330	23·1940	19·2391	16·3307	14·1322	12·4280	11·0766	9·9831	67
68	28·8670	23·2635	19·2753	16·3497	14·1422	12·4333	11·0794	9·9847	68
69	28·9971	23·3303	19·3098	16·3676	14·1516	.2·4382	11·0820	9·9861	69
70	29·1234	23·3945	19·3427	16·3845	14·1604	12·4428	11·0844	9·9873	70
71	29·2460	23·4563	19·3740	16·4005	14·1686	12·4471	11·0867	9·9885	71
72	29·3651	23·5156	19·4038	16·4156	14·1763	12·4510	11·0887	9·9895	72
73	29·4807	23·5727	19·4322	16·4298	14·1834	12·4546	11·0905	9·9905	73
74	29·5929	23·6276	19·4592	16·4432	14·1901	12·4580	11·0922	9·9914	74
75	29·7018	23·6804	19·4850	16·4558	14·1964	12·4610	11·0938	9·9921	75
76	29·8076	23·7312	19·5095	16·4678	14·2022	12·4640	11·0952	9·9929	76
77	29·9103	23·7800	19·5329	16·4790	14·2077	12·4666	11·0965	9·9935	77
78	30·0100	23·8269	19·5551	16·4897	14·2128	12·4690	11.0977	9·9941	78
79	30·1068	23·8720	19·5763	16·4997	14·2175	12·4714	11.0988	9·9946	79
80	30·2008	23·9154	19·5965	16·5091	14·2220	12·4735	11.0998	9·9951	80
81	30·2920	23·9571	19·6157	16·5180	14·2262	12·4755	11·1008	9·9956	81
82	30·3806	23 9972	19 6340	16 5265	14·2301	12·4773	11·1016	9 9960	82
83	30 4666	24 0358	19 6514	16·5344	14 2337	12 4790	11·1024	9 9963	83
84	30 5501	24·0729	19·6680	16·5419	14·2371	12 4805	11·1031	9·9967	84
85	30 6312	24 1085	19·6838	16·5489	14 2403	12·4820	11·1038	9·9970	85
86	30·7099	24·1428	19 6989	16 5556	14 2433	12 4833	11 1044	9 9972	86
87	30 7863	24·1758	19·7132	16 5619	14·2460	12·4845	11·1049	9 9975	87
88	30 8605	24 2075	19·7269	16·5678	14·2486	12·4857	11·1055	9 9977	88
89	30·9325	24 2380	19 7399	16·5734	14·2511	12 4868	11 1059	9·9979	89
90	31 0024	24·2673	19 7523	16·5787	14·2533	12·4877	11·1064	9 9981	90
91	31 0703	24·2955	19 7641	16 5837	14·2554	12·4886	11 1067	9·9983	91
92	31·1362	24 3226	19·7753	16 5884	14·2574	12·4895	11 1071	9 9984	92
93	31·2002	24 3486	19 7860	16·5928	14·2592	12·4903	11·1074	9 9986	93
94	31 2623	24 3737	19·7962	16·5970	14·2610	12 4910	11 1077	9 9987	94
95	31 3227	24 3978	19 8059	16 6009	14·2626	12·4917	11 1080	9·9988	95
96	31 3812	24 4209	19 8151	15·6047	14·2641	12·4923	11·1083	9 9989	96
97	31·4381	24 4432	19·8239	16·6082	14·2655	12·4928	11 1085	9 9990	97
98	31·4933	24 4646	19 8323	16 6115	14·2669	12·4934	11·1087	9 9991	98
99	31 5469	24·4852	19 8403	16 6146	14·2681	12·4939	11·1089	9 9992	99
100	31 5989	24 5050	19·8479	16·6175	14·2693	12 4943	11·1091	9 9993	100
Perpetuity.	33 3333	25 0000	20 0000	16·6667	14·2857	12·5000	11·1111	10 0000	Perpetuity.

* *Example.*—£1 per annum, for 60 years, at per cent., is worth in present money 27·6756, or £27 13s. 6d.—At 4 per cent 22·6235, or £22 12s 6d.—At per cent, 18·9293, or £18 18s. 7d.—At 6 per cent., 16 1614, or £16 3s. 3d.—At 7 per cent., 14 0392, or £14 0s. 9d.—At 8 per cent., 12 3766 or £12 7s. 6d.—At 9 per cent., 11·0480, or £11 0s. 11d.—At 10 per cent., 9,9672, or £9 19s. 4d.

CHAPTER III.

INSURANCE SHARES AS AN INVESTMENT.

A short chapter on Insurance Shares may not be unacceptable to our readers; for while it will be too late to save some of them from the bitter experience of the past few years, it may be in time to offer a word of warning to many who might otherwise fall victims. Such a chapter is also essential to the completion of the design of this work.

There are thousands of persons who up till quite recently never knew any other than the bright side of the Insurance share question: some perchance even yet have their knowledge limited to the weekly columns of the *Bankers' Circular*, the *Economist*, or some other "weekly newspaper;" and as it is rarely that any but the well-conducted and successful Companies find their way into the columns of respectable journals, the public information is necessarily limited. Turn to any of these ordinary lists and what can be more fascinating? You will find that the shares of the *Rock*, with 10*s*. paid, command £7 15*s*. in the market. You will find the *Provident* with £10 paid selling for £38, or the *Universal* with the same amount paid, selling for £33 10*s*.; or again the *Law Life*, with £10 paid, selling for £89. It is almost wonderful that with such figures everybody's money does not go into Insurance shares. But there is another side to the picture. It is to be found in the table of offices which have ceased to exist, given in our earlier portion of this work. That table applies to Life offices only. We have one in preparation for the Fire Offices, and a fearful list it is. Shall we glance at the fate of a few of the Offices that lay claim to its space? What tales of misery it brings up to our recollection. It seems but as yesterday that a gentleman was in the Queen's Bench Prison for liabilities to the extent of £40,000 for having taken ten shares in a bubble Insurance Company; or that another gentleman went through the Insolvent Debtors' Court chiefly in consequence of a claim of £2,300 for his share of the liabilities of the defunct *Counties Union!* A whole list of such misfortunes are crowding down to our pen's point. The *Preston and North Lancashire* Office, in a little less than three years lost all its paid-up capital of £20,000, and the shareholders
make up the remaining liabilities; the *Brewers'* Company
capital, and the shareholders accounted themselves
escaping with a call of £2 per share in addition; the
its doors with a loss of £3,000; the *Irish Alliance* of
Bath, £18,000; the *Beacon* upwards of £40,000, of w

Laurie (one of the exposers of the rascally *West Middlesex*) had to pay £7,000.* Then there is the *Sea, Fire, Life*,—to escape from the liabilities of which many have submitted to years of exile. Coming down to more recent dates we have before us the misfortunes of the *State* (Fire) Office, the *Legal and Commercial* and the *Protestant*; and, returning to the Life Offices, the *Asylum*, the *Amazon*, the *Deposit and General*, the *National Guardian*, the *Athenæum*, and the *Prince of Wales*, are amongst the most recent instances of Offices which have spread ruin and dismay amongst their shareholders.

Here, then, we have seen the two extremes of insurance speculation: we may now discuss the subject calmly. In all kinds of hazard we must prepare for extremes—extreme success—extreme adversity and consequent disappointment, or even ruin. In the early days of Proprietary Insurance Offices the hazard was less than now; for, if success was slow, it was generally *sure*. In modern times Companies endeavour to rush into a large business suddenly; and hence the chief point of danger. The object of raising a capital by shares was originally for the protection of a Company; but it has become the modern fashion to expend this sum or the greater part of it in what is termed (but does not always turn out to be the fact) "establishing a business." If the business so obtained proves to be sound and good it is well for the shareholders. The speculation has succeeded and the expenditure is not regretted. But the chances are that a connexion obtained by lavish expenditure will be of a very promiscuous and unstable character—will be a business, in fact, requiring the constant aid of capital to carry it on; but, the capital having been expended in obtaining it, the concern has to struggle on as best it may. Being no longer able to *purchase* business it has to seek it by ordinary and legitimate means. Agents perceive the change and become dissatisfied. The business falls off or, if sustained in amount, suffers in character: *bad lives* being accepted because good ones are not offered; and, finally, the whole thing becomes a wreck, and the shareholders, only at this last act of the drama, learn the full extent of their liabilities and misfortunes.

We need not say how many of the modern Offices sit before our mind's eye for this mournful portraiture; nor need we say that such consequences may, by prudent management, be averted or avoided.

There is room for all the present Assurance Offices: there is room for any reasonable number of new ones, provided they can show good grounds for springing into existence. But there is no real chance for Offices that are not prudently and economically managed. Where such conditions exist we know of no speculation presenting greater probabilities of success than Assurance and Insurance Companies: consequently we know of no class of shares more calculated to produce advantageous investments. Insurance Associations are in their very nature of *slow growth*; and their shares will not be expected by prudent holders to rise suddenly into value. If the principle of distributing the surplus or profits be an equitable one the value of the shares will grow with the growth of the Office: the investment will, therefore, be of a *permanent character;* and the ephemeral results, looked for from many kinds of Joint Stock Companies, are not to be looked for here.

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* Vide "Post Magazine and Insurance Monitor."

In the list of shares given at the close of this chapter we have adopted three distinct classifications in addition to a miscellaneous table. The first table relates to shares in Companies doing *life business only.* The second to Companies combining the business of *Life* and *Fire* Insurance under the same deeds or charters; and the third table comprises Offices doing *Fire* business only.

A few words may be said by way of explanation of this classification. Offices doing life business only, if properly conducted, are subject, after the first few years, to very slight fluctuations in their mortality; and provided, therefore, they be *economically,* as well as skilfully managed, their shares may be looked upon as *certain* ultimately to become valuable: their value being dependent upon (1) the character of the business transacted—(2) its amount, and (3) the proportion of profits apportioned to the shareholders under the deed.

We have already (p. 248) offered some remarks upon the impropriety of Life and Fire business being so combined as that the losses shall be paid out of one common fund. The nature of Fire business is such as to render it far more fluctuating in profit or loss than Life business. If the fluctuation be on the side of loss, then the life funds —or the funds necessary to meet the claims under the life policies— will be encroached upon, and both policy-holders and shareholders will, in all probability, suffer. The custom is, fortunately, almost discontinued in the present day; and the existing Offices which were originally so constituted have mostly attained to a position of safety. Still we cannot look upon shares in such Companies as nearly so desirable as those in established Life Offices, and hence we place them in the second class. The elements of risk still exist, however large and apparently successful the business may have become.

The third list is confined to the shares of Fire Offices only: that is, Offices who either do no life business—as the *Phœnix* or the *County*—or to Companies worked with Life Offices, but having distinct funds and deeds, as the *Sun* or the *Imperial.* That a Fire business may be managed so as to pay, and to pay well, there can be no doubt; but, to this end, great care and caution must be exercised in these days of vigorous and almost unscrupulous competition. To young Fire Offices we may give three words of advice:—1. *Avoid large risks.* 2. *Avoid adjoining risks.* 3. *Avoid hazardous risks.* What are technically called first-class risks pay better than all others whatever rate of premium may be secured. The *Essex Economic* Fire Office, for many years, insured first-class dwelling houses and their contents at 1*s.* per cent.; and, while it confined its attention to this description of business, it paid well although its business was comparatively small. When its managers became more ambitious, and launched out into more hazardous risks the decline of the Office soon became apparent, and an amalgamation was the result.

It must be borne in mind that while most of the Insurance Companies founded since 1862 come under the operation of the

Limited Liability Law, the Companies founded before that period do not as a rule possess that advantage. In our remarks upon *Mixed* Offices (Div. III. chap. 6) we have shown how, by the introduction of special clauses in the policies, the liability of shareholders has been attempted to be limited. In Companies which have obtained a special Act of Incorporation, or a Royal Charter, the liability is generally limited. The ordeal through which Companies pass to obtain such privileges is generally very severe. This non-limitation of liability is an important point to be remembered by investors in the shares of Insurance Companies; but it is such an obvious one that we do not intend to enlarge upon it.

Finally, as we have elsewhere remarked, a change has come over the practice of Assurance Companies calculated to lessen the probabilities of those large profits resulting to shareholders which we see in the case of some of the earlier Companies. Persons intending to assure their lives now look to Offices which divide, at least, the greater portion of their profits amongst the policy-holders: and the period at which a division of profits commences dates earlier in the history of the Company than in days gone by. Instead of waiting twenty years, as did the *Equitable*, we expect *now* to see it stated on the prospectus of a new Office that the first division of profits will be at the expiration of *five or seven* years from the commencement; and it is rarely that the managers of a Company, whatever its position, will muster the courage—or shall we say the *honesty*—fairly to state that in consequence of the heavy preliminary expenses incident to the establishment of an Office in the present day there is no surplus to divide.

On the contrary, with a view to establish confidence, the largest possible bonus is given to the policy-holders; and, under such circumstances, the shareholders naturally expect to participate in the good furtune of the Office; hence double claims are made on its funds; the foundations of misfortune are laid; and, finally, the adage becomes realized that "a thing too good is always dangerous."

Taking the cautions here presented for what they are worth and adding, as any business man may do, the still more obvious one of seeing, before applying for shares, that the character of the persons with whom we shall place ourselves in contact by the contemplated step are respectable, trustworthy, and competent to conduct the business they have undertaken, the reader may determine upon the desirability of entering upon this class of Assurance investment. We trust that the day has gone by for looking upon Insurance shares, promiscuously taken, as amongst the most hazardous and ruinous of adventures; and, taking courage in the fact that the fiercest storms are succeeded by the mildest calms, we bring this chapter to a conclusion:—Nothing venture, nothing have," being the motto which the goddess of fortune has inscribed over the portals of her temple.

TABLE I.

Offices doing Life business only.

NAME.	Nominal Capital.	Number of Shares.	Amount.			Paid up.			Present Price.		
	£		£	s.	d.	£	s.	d.	£	s.	d.
Albert	500,000	25,000	20	0	0	3	0	0			
Argus	300,000	3,000	100	0	0	25	0	0	31	10	0
Albion	1,000,000	2,000	500	0	0	50	0	0			
Briton, Medical, and General	200,000	20,000	10	0	0	1	0	0	1	10	0
City of Glasgow	600,000	24,000	25	0	0	2	10	0	4	10	0
Clerical, Medical, and General	500,000	5,000	100	0	0	10	0	0	28	0	0
Crown	308,000	6,160	50	0	0	5	0	0	27	5	0
Eagle	2,000,000	40,000	50	0	0	5	0	0	7	5	0
Edinburgh	500,000	5,000	100	0	0	15	0	0	29	17	6
English & Scottish Law	1,000,000	20,000	50	0	0	3	5	0	4	0	0
Equity and Law	1,000,000	10,000	100	0	0	6	0	0	7	15	0
Equitable Reversionary	283,500	2,700	105	0	0				102	15	0
General Provident	500,000	50,000	10	0	0	2	0	0	1	0	0
Gresham	100,000	5,000	20	0	0						
International	500,000	25,000	20	0	0	2	10	0			
Imperial Life	750,000	7,500	100	0	0	10	0	0	15	0	0
Law Life	1,000,000	10,000	100	0	0	10	0	0	89	0	0
Law Property	250,000	5,000	50	0	0						
Legal and General	1,000,000	20,000	50	0	0	8	0	0	7	10	0
Life Association of Scotland	400,000	10,000	40	0	0	6	0	0	20	10	0
London & Provincial Law	1,000,000	20,000	50	0	0	4	17	8	4	10	0
London and Lancashire	100,000	10,000	10	0	0	1	0	0			
National Industrial	100,000	10,000	10	0	0						
National Union	100,000	20,000	5	0	0	1	0	0	0	5	0
Pelican	Stock.	40,000							54	0	0
Provincial Union	100,000								0	15	0
Provident	250,000	2,500	100	0	0	10	0	0	38	0	0
Rock	1,000,000	200,000	5	0	0	0	10	0	7	15	0
Sun		4,000									
Scottish Friendly	100,000	10,000	10	0	0	1	0	0			
Sovereign	180,000	18,000	10	0	0	2	17	0	2	10	0
Standard	500,000	10,000	50	0	0						
Star	100,000	4,000	25	0	0	1	15	0			
Universal	500,000	5,000	100	0	0	10	0	0	33	10	0
Westminster & General	100,000										
Whittington	100,000	10,000	10	0	0	1	0	0			

TABLE II.

Offices Transacting Life and Fire Business.

NAME.	Nominal Capital.	Number of Shares.	Amount.			Paid up.			Present Price.		
	£		£	s.	d.	£	s.	d.	£	s.	d
Alliance	5,000,000	50,000	100	0	0	11	0	0	13	5	
Atlas	1,200,000	24,000	50	0	0	5	15	0	10	0	
Caledonian	1,500,000	15,000	100	0	0	10	0	0	38	0	
Church of England . .	1,000,000	20,000	50	0	0	2	0	0	3	15	
Commercial Union . .	2,500,000	50,000	50	0	0	5	0	0	4	5	
European	280,000	120,000	2	6	8	0	15	0			
General	1,000,000	10,000	100	0	0	5	0	0	5	0	
Guardian	2,000,000	20,000	100	0	0	50	0	0	46	10	
Hand-in-Hand . . .											
Hercules	230,000	23,000	10	0	0	2	0	0			
Lancashire	1,460,400	73,020	20	0	0	2	15	0	3	5	
Law Union	1,000,000	100,000	10	0	0	0	10	0			
Liverpool&Lond.&Globe	1,750,080	87,504	20	0	0	2	0	0	6	15	
London Assurance . .	896,550	35,862	25	0	0				46	10	
London and Southwark	175,250	7,010	25	0	0	5	0	0			
National Ass. of Ireland	1,000,000	4,000	250	0	0	25	0	0			
North British & Mercan.	2,000,000	40,000	50	0	0	6	5	0			
Northern.	2,000,000	20,000	100	0	0	5	0	0			
Patriotic	1,421,500	14,215	100	0	0	10	0	0			
Provincial (Welsh) . .	200,000	20,000	10	0	0	1	0	0	3	0	
Queen	2,000,000	200,000	10	0	0	1	0	0			
Royal	2,000,000	100,000	20	0	0	3	0	0	6	0	
Royal Exchange Assur.	689,220	Stock.				100	0	0	305	0	
Royal Farmers' . . .	500,000	50,000	10	0	0	2	0	0			
Scottish Imperial . .	1,000,000	50,000	20	0	0	1	0	0			
Scottish National. . .	200,000	20,000	10	0	0	2	5	0			
Scottish Provincial . .	1,000,000	20,000	50	0	0	2	10	0			
Scottish Union . . .	5,000,000		20	0	0	1	0	0	2	11	
Union.	300,000	1,500	200	0	0	20	0	0	250	0	
West of England . . .	600,000										
Yorkshire											

TABLE III.

Fire Offices only.

NAME.	Nominal Capital	Number of Shares.	Amount.			Paid up.			Present Price.		
	£		£	s.	d.	£	s.	d.	£	s.	d
Birmingham	300,000	1,200	250	0	0	55	0	0	105	0	
Birmingham Alliance .	500,000	20,000	25	0	0	1	0	0	0	12	
County	400,000	4,000	100	0	0	10	0	0	86	0	
Household	50,000	25,000	2	0	0	1	0	0	1	0	
Imperial Fire	1,200,000	2,400	500	0	0	50	0	0	345	0	
Law Fire	5,000,000	50,000	100	0	0	2	10	0	5	0	
London and Lancashire	1,000,000	40,000	25	0	0	2	10	0			
Manchester	1,000,000	10,000	100	0	0	10	0	0	9	0	

TABLE III. (CONTINUED).

NAME.	Nominal Capital.	Number of Shares.	Amount.			Paid up.			Present Price.		
	£		£	s.	d.	£	s.	d.	£	s.	d.
Norwich Equitable . .	250,000	50,000	5	0	0						
Phœnix	50,000	Stock.	100	0	0				107	0	0
Salop.	60,480	Stock.	All.								
Scottish Commercial .	550,000	55,000	10	0	0	1	0	0	1	15	0
Scottish Fire	1,000,000	50,000	20	0	0	2	0	0	1	10	0
Shropshire and N. Wales	100,000										
Sun, Fire	300,000	1,500	200	0	0	200	0	0			
Westminster	100,000										

TABLE IV

Miscellaneous Companies.

NAME.	Nature of Business.	Nominal Capital.	No. of Shares.	Amount of Shares.			Paid up.			Present Price.		
		£		£	s.	d.	£	s.	d.	£	s.	d.
Accident	Accidents	50,000	25,000	2	0	0	1	0	0			
Alliance	Marine	1,000,000	10,000	100	0	0	25	0	0	25	0	0
Birmingham Alliance	Life,Guar. & Ann.	250,000	10,000	25	0	0	1	0	0			
Boiler	Steam Boilers, Machinery, &c.	175,000	35,000	5	0	0	1	0	0	1	5	0
Brit.&Foreign Marine	Marine	1,000,000	50,000	20	0	0	2	0	0	2	0	0
County Cattle	AccidentstoCattle	50,000	5,000	10	0	0	1	0	0			
County	Hail											
County Marine... ...	Marine and Mariner's Lives ...	100,000	25,000	4	0	0	2	0	0	2	10	0
Dublin Widows'Fund	ReversionaryAnn.											
English & ScotishMar.	Marine	1,000,000	10,000	100	0	0	8	0	0	1	0	0
Equitable	Hail											
Etna	Fire and Marine .	5,000,000	500,000	10	0	0	1	0	0	1	0	0
General Hail-Storm...	Hail-Storm ...	200,000	8,000	25	0	0						
General Reversionary	PurchaseofRever.	500,000	5,000	100	0	0	100	0	0			
Home and Colonial...	Marine	1,000,000	20,000	50	0	0	5	0	0	1	10	0
Indemnity Marine ...	Marine	1,345,300	13,453	100	0	0				113	0	0
LawReversionaryInt.	Reversions &Ann.	250,000	10,000	25	0	0						
London & Caledonian	Marine	500,000	20,000	25	0	0						
London&Prov.Marine	Marine	1,000,000	50,000	20	0	0				¼ dis.		
Marine	Ships and Goods	1,000,000	10,000	100	0	0	18	0	0	96	10	0
Maritime	Marine	500,000	50,000	10	0	0	2	0	0			
National Guarantee...	Fidelity	250,000	12,500	20	0	0	1	0	0			
NationalReversionary	Reversions											
Ocean Marine	Marine	1,000,000	40,000	25	0	0	5	0	0	19	10	0
Oriental and General	Marine											
Protector	Endow.Annuities and Loans ...	100,000	1,000	100	0	0						
Railway Passengers...	Accidents	1,000,000	20,000	50	0	0						
Re-Insurance	Life, Accidents, Marine, Fire, &c.	100,000	50,000	2	0	0	1	0	0	1	0	0
Thames and Mersey...	Marine	2,000,000	100,000	20	0	0	2	0	0	5	10	0
Union	Marine	300,000	1,500	200	0	0	20	0	0	277	2	6
Universal Marine ...	Marine	1,000,000	50,000	20	0	0	5	0	0	3	5	0
Western	Fire and Marine .	1,000,000										

[The time required for the completion of other portions of this work, coupled with the foolish reserve employed by some of the Offices respecting the true position of their share capital, has caused these Tables to assume a somewhat incomplete state. The shares of many of the Companies ha come into the market; and hence the meagreness of information, which has chiefly been der published share-lists. The prices may be written in as they come to the knowledge of the r

DIVISION VI.

MISCELLANEOUS.

CHAPTER I.

GUIDE TO THE SELECTION OF AN ASSURANCE OFFICE.

> "The shrewd, practical sense, with which Englishmen are accustomed to investigate most matters of pecuniary interest, would, if applied earnestly to enquiries as to Life Assurance Companies, soon lead many to discover that other small and unimportant points of difference are suffered to divert attention from real and substantial grounds of preference or of objection. Plans of apparent advantage to assurers which have been, substantially, long adopted, are dressed up in new garbs, and brought out with new names as distinctive features of new Companies. And what little there is of real novelty will often be found, if closely investigated, as to its results in practice, to be of almost infinitesimal value, compared with those great and solid advantages of which the proportion afforded by different Companies is the real matter for inquiry. But it is easier to contrive such attractive allurements than to manage a Company with economy and skill, so as to attract business by showing actual results. Fallacious prospects will therefore continue to be held out; and the only effectual protection for the public will be found in their own good sense and intelligence."—*Mr. Frederick Chaplin's Pamphlet on Life Offices.*

All that has been said in the previous chapters of this work is intended to prepare for, and aid in, the solution of the one great problem—*the selection of an Office.* Agents require this information. Persons who intend to assure, if possible, still more so. As the latter, however, generally draw their information from the former, we shall address ourselves more particularly to Agents: it is they who extend the blessings of life assurance; it is they who should, as far as possible, make themselves masters of its details.

The subject appears to admit of, and indeed to require, a double process of treatment. We must not only indicate what is to be sought for, but also what is to be avoided. The mariner with eager eye seeks the beacon light, and with steady hand steers away from the danger it indicates. What the beacon is to the mariner, we hope to be to the Assurance Agent: giving him sufficient light to guide his course: sufficient warning to keep him clear of danger.

We have at this point more than at any other, to avoid any expression of partiality. It is no part of our purpose to advocate one class of Offices over another. But it is an essential part of our purpose to indicate sound from unsound principles, to discriminate between those principles which are calculated to lead to success; and those which are fallacious, and likely to produce disappointment and disaster. This can be done with strict impartiality. All previous writers, who have had the science of the subject truly at heart, rather than the advancement of any particular principle or Office, have deemed it necessary to utter words of warning regarding the danger which appeared to be gradually surrounding the practice of Life Assurance. These appear to be chiefly of two classes: 1. That the public was being led to expect too much; and 2. That the benefits which the system is really capable of affording were becoming wilfully distorted and perverted.

Dr. Price, who, as the reader knows, was one of the earliest practical writers on the subject, pointed out with much earnestness the great importance, in order to the "safety" of Life Offices, that their affairs should be under the inspection of able mathematicians. "Melancholy experience," he says, "shews that none but mathematicians are qualified for forming and conducting schemes of this kind. In short, dangerous mistakes may sometimes be committed if the affairs of such Societies are not managed *frugally*, *carefully*, and *prudently*." Mr. Francis Baily, who, like Dr. Price, rendered good service in exposing the fallacies of many of the early Assurance and Annuity schemes, passed in review in the first portion of this work, illustrates the caution required in carrying out a Life Assurance as contrasted with Fire Insurance. "A person," he says, "who makes an insurance against *Fire*, is content if the Office at which he insures possesses the present confidence of the public and of himself, since he may remove the policy to any other Office *whenever* he doubts its stability or responsibleness. Not so (he justly adds) with a Life Assurance. *For a policy of that kind once entered into cannot be removed without considerable loss and inconvenience to the party.*" Then he comes to the gist of the matter: "As the claim may not become due for 20, 30, or 40 years, (nay, perhaps, for more than half a century) it therefore particularly behoves him to be satisfied not *only with the present flourishing state of the Society, but with the prospect of its permanency, and future solvency.*" Mr. Babbage has written in the same strain. Professor de Morgan shows still further grounds for caution. "A Life Office," he says, "may be in reality *insolvent* many years before the symptoms of *bankruptcy* come on!" He admits that an Office which has been in a state of insolvency may, by introducing a better system, "or by the mere force of circumstances," recover its position. "But," he continues, "I throw this part of the argument (though it shows a strong principle of vitality inherent to the constitution of such Offices) out of the question; *for surely no sane and honest person would trifle with important matters so far as to assert that the possibility of temporary insolvency to be redeemed by the chapter of accidents, or prudence when it was wanted, should enter into the deliberate calculations on which men should be invited to stake the existence of their children.*"

A host of writers follow with the same views. We do not require to quote them. The truth from one source is as great as the truth from a hundred. Still where so many considerations exist, it is well to see that none which are of importance are passed over; and, above all, we are desirous of showing that the principles we lay down have the support of older and wiser heads than our own. Various writers lend various aspects to the caution to be employed. Passing from the great mathematicians above quoted, we come amongst a batch who may be termed, by way of distinction, the moral writers on the assurance question. They guard us against the deceptions and dangers of untoward appearances with an enthusiasm worthy of their cause. Mr. Pocock points out the importance of being satisfied "that the parties having the management of the Office are well known to the mercantile world as men of substance, integrity, and intelligence, *rather than persons with imposing titles*, such as, in fact, are daily announced as Managers and Directors of many of the speculations of the present time: *for it should always be borne in mind that the great object to be obtained is prudent management, and a careful investment of the funds of the Society.*" Another of the same school reminds us, as, indeed we have already seen, and shall do well here again to note, that many of the most flourishing Offices now in existence began *humbly*, and have worked their way up into solid and substantial Institutions, "not by catch-penny instrumentalities, but on deliberate calculation, and on well-directed and continued efforts." And a third, addressing himself to the readers of the *Post Magazine*, the pages of which are ever open to such advice and caution, says, "It is admitted, by all prudent persons, that previously to depositing money with a *banker*, we should have undoubted evidence of the solvency and ability to pay all demands when required." And he asks, "If such is a necessary precaution with a banker, *how much more so* with a Life Assurance Company, with which a contract has been made to pay an annual sum to provide for a certain contingency, whenever such an event may happen, which sum cannot be withdrawn but at a great sacrifice?"

The last writer leads us almost to a financial aspect of the case. This we shall deal with presently. We have yet one or two of the moral writers to dispose of. "To our mind," says another of these, "incomparably the most important point is, that a parent when about to perform, what we consider to be the holy duty of providing for his family, should be enabled to judge for himself whether the Society into which he is about to enter, is one which is likely to deceive him at a time when deception is most deplorable, and its effects perhaps irredeemable."—such information it is the purpose of the present chapter to furnish.

The following remarks we commend to our readers, as bearing strongly on the subject before us:—

> "Life policies are often the sole provision for the widow and the orphan, the result, perhaps, of the savings of a lifetime; *it would be well, therefore,* [illegible] *make* [illegible] [illegible] *his old age* [illegible] [illegible] and that in the event of his death that provision might turn out to be [illegible] and those [illegible] to him [illegible] be reduced to poverty and want. In what way, then, can a man secure himself? *We think only by* [illegible] *gating the character of the Office itself*, and taking care that it be one of wealth, standing, and repute.*

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* *Life Assurance: its Schemes, Difficulties, and Abuses.*

Do not these remarks apply as well to eighteen 'sixty-seven as to eighteen 'forty-six, the year to which they were particularly directed? The numerous Insurance Companies now winding up in the Court of Chancery afford an answer! Here is some advice wafted from the other side of the *Atlantic:* brother Jonathan has the credit of being far-seeing in these matters:—

> "If the Office be *established* no difficulty need be experienced in ascertaining how it has acted towards its members. Has it invariably kept them in the dark in reference to its affairs? Does it hold its meetings with closed doors, that it may effectually conceal the condition of its business? Has it dealt honourably with embarrassed members, and been governed in its settlement of claims by the spirit rather than by the letter of the assurance contract? If the answers to the interrogatories be not satisfactory, have nothing to do with it; avoid it as you would an Indiana bank-note. If satisfactory then look a little further. Scan closely its published accounts. *Mark what proportion its realised capital bears to its age and its income. Should you discover, as perhaps you will, that an Office boasts of its position as the result of years of business, without being able to show invested means equal to a year's income, set that Office down as tottering, and therefore undesirable as the ague. If subscribed capital, premiums, and all have been expended in providing gilt gingerbread incident to a start, direct your steps to more economical quarters. Begin next to look for genteel professional tricks.* Remember that an English Railway King descended to the kitchen to cook accounts, and that Life Assurance luminaries may be tempted to imitate his example. A gridiron is not a vulgar thing when handled with kid-gloves. *Look out then for cooking!* It may be that five years' mortality is made to look like that of six, for the purpose of establishing credit for care and good fortune in selection. It may be that the present value of the 'charge' on loading has been capitalised as well as the present value of the net premium, without also capitalising the present value of the future expenses. Mistrust all mystery, all wise winks and sagacious shakes, and rest not satisfied till you discover an Office whose balance-sheet and mode of dealing accord with your ideas as a common-place business man." *

The foregoing considerations lead to three distinct and important conclusions, viz.:—

1. That great *knowledge* is required for the successful conduct of an Assurance Office.

2. That great integrity of purpose is required on the part of promoters and conductors of Life Offices to render them secure and prosperous.

3. That the utmost vigilance and caution is required on the part of persons intending to assure, in order to guard themselves against being deluded from the solid advantages of quiet and well-conducted Offices, into those more showy and ephemeral Offices of which modern times have been so prolific.

It is against the evils implied under the third head that we have still further to direct the attention of the reader. The author of *Life Assurance, its Schemes, etc.*, says:—

> "It is a bold, and perhaps presumptuous, assertion for the enlightened era of 1852: yet we venture to declare, that notwithstanding the publicity given to the scheme *the general public continues to be almost as ignorant of the real pretensions and character of Life Assurance as it was a century ago*, otherwise there would scarcely be found so many ready dupes to the preposterous promises of impudent speculators, nor haply so fruitful a supply of those visionary and extravagant schemes to which, to the regret of the sober-minded, every passing hour is giving birth. Better," continues the writer, "the total obscurity of former years, than the present glimmering of perception, which only enables men to view the subject in a false and delusive light. . . . . . .
> The facility with which new Assurance Offices are set on foot, the tempting promises with which each new scheme is baited together with the abuses, which ill-directed competition amongst the established Societies has introduced into practice, have, in too many instances, lulled public caution to sleep, and *converted a scheme of infinite*

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* *Pamphlet by George Sheppard, Assistant Actuary of the Canada Life Assurance Company.*

> *utility and philanthropy into one of the greatest speculative projects of the present day.* Many miscalled improvements, instead of being based on prudent calculations, have been rashly and hastily built upon loose hypothesis; and, so far from ultimately bestowing any promised benefits, will only be productive of mischief and disappointment."

Mr. Samuel Brown adds, in the same strain, "There is too much reason to fear that many of the schemes and modifications of Life Assurance in the present day have been introduced rather by the ardour or the pressure of competition, than by the sober judgment to choose only what will, in the end, be mutually beneficial to the Companies and the assured." The large amount too frequently paid away in commission, in order to popularise such new features, he justly pronounces as an unnecessary waste to the assured, "and a loss to their families which they will some day discover and regret."

Then we have to say a few words about "cheap premiums," "gingerbread prospectuses," and the fallacy of great names for business purposes. These are all evils to be guarded against, and repeatedly enforced, because by these things the unwary are most frequently entrapped. The "bonus question" is also one of great danger. On all these points, suggestions and cautions will be offered. The reader must not be impatient with these details:—properly studied, they enable him to combat the schemes and devices of a thousand crafty heads who have sedulously surrounded the practice of Life Assurance with apparent advantages, the *unsoundness* of which can only be fully discerned and deprecated by those who have studied, and not those who have simply glanced over the subject.

It is a peculiarity of the popular works on Life Assurance, that they continually impress upon the reader that great "caution" is required; but (too frequently) do not furnish the information upon which that caution should be based. The tendency, therefore, is to deter the persons consulting such works from assuring at all: whereas it is their true purpose to popularise the principle, but to guard their readers against the evils and errors of the practice. Too many of the prospectuses issued by the Offices themselves have this tendency: and on this point we shall offer some special remarks on our chapter to AGENTS. When the reader becomes acquainted with all the great authorities on the science and practice of Life Assurance, and when he finds them all continuously, and, so to speak, unanimously, pointing to the evils and abuses which have crept in, his mind becomes impressed with the importance of guarding his friends against them. He then acts from the force of conviction, and not simply upon mere superficial information, easily acquired, and as easily forgotten. It is with this view that we have loaded our text with authorities; and in the progress of the work we have had numerous acknowledgments that our intention has been appreciated.

We now proceed with our task. Mr. Chaplin of the *Edinburgh* Life Office, lays it down in his excellent little pamphlet, that "the real points to be considered in making selection are of a large and prominent kind; such as the safety and stability of the Company; the rate at which property has been found to accumulate and increase when entrusted to their keeping, and the like. *Not* such very small matters as the payment of two or three pounds, more or less, in an operation involving the safety of thousands." Mr. Currie, in his useful little guide, also urges the importance of respectability and standing:—"Regard should be had rather to the stability of the Company, and its undoubted means to maintain its engagements, *than to the apparently trifling benefit which might arise from lesser payments.*" Mr. Langley, in his excellent *Vade Mecum*, mentions, more in detail, "The chief points to be held in view in coming to a decision on the merits of an Assurance Office." These he says are 1. The age of the Company, and the financial position obtained in the time. 2. The rates adopted, and the Tables of mortality on which they are founded. 3. The profits allotted, and if a Mixed Company, whether it proposes to become Mutual. 4. The character of the Directors 5. The habits and character of the Manager.[*] 6. The peculiar features of the Office." On all the more important of these points the reader will already have had full information. The world would welcome from the hands of Mr. Langley a work elucidating the fourth and fifth heads of his summary! The records of the Police and Insolvency Courts would render him some aid in his enquiry!

But if it should be shown that all the names on a prospectus are respectable, it must not be taken for granted from that circumstance, that an Office is in a sound and healthy condition. Nearly a half-century ago, Mr. Charles Babbage offered the following observations on this point:—

> "The readiness with which gentlemen of respectability, wealth, and intelligence allow their names to be attached to Companies with whose proceedings they are but little acquainted *is much to be regretted.* . . . . . *It becomes therefore essential for every one to examine and judge for himself, and not to be led away when selecting an Office for assuring his life by high sounding names.* A want of proper attention to this point," he adds, "may be the means of occasioning disappointment and loss to the unfortunate individual, who, *whilst following the shadow, loses sight of the substance.*"

And still more recently the Messrs. Chambers have found it necessary to repeat this warning. In their Journal of July, 1855, speaking of "Bubble Companies," they say—"One of the saddest features of the whole affair is the facility with which men of some social, and even political standing, lend their names to countenance these concerns. They cannot be always aware of the unsoundness; but if they were to take due care before granting permission to have their names printed in prospectuses and advertisements, they could not fail to be warned of the real character of the act they are requested to commit. *There is, in fact, a loose morality in giving names to public institutions without at the same time giving personal attention to their concerns, which is altogether reprehensible.*"

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[*] Mr. Babbage offers some remarks bearing upon the question of the influence of Managers over the affairs of a Company, and shows how this may be overthrown:—"Persons unable of themselves to form an estimate of the merits of an Office, sometimes judge that it must be good from the known skill and ability of the *Actuary* who conducts it; and on the other hand, if any inconsistency or impropriety in its proceedings is pointed out, the defect is almost invariably imputed to the same officer. Now the degeee of knowledge possessed by persons so situated at the different Institutions is exceedingly various, passing through all degrees, from the most superficial acquirements, derived merely from the routine of an Office, up to the most profound knowledge of the subject. Unfortunately, however, for the public, the power they possess is not always equal to the weight which is due to their integrity and knowledge; and whatever may be the excellence of any regulation they propose, or the advice they offer, it is frequently neutralized *by passing through the ordeal of a Board of Directors, far too intent upon profit*, and who in their joint capacity esteem it no degradation to sanction measures which they would be very sorry to be considered as acting upon in their characters as individuals." We could strengthen this with an instance, if necessary.

This is hardly a hopeful aspect of things; but unfortunately it is, in many instances, too true. We are gradually approaching the financial aspect of the question; although we can ourselves add little to that we have already stated in the chapters on the "Finance of Life Assurance," and "Assurance Accounts." There are, however, several important considerations attaching to this part of the subject which have been well handled by other writers, of which we desire our readers to have the benefit.

Mr. Samuel Brown says, in reference to the delusive character of large figures in reports and balance-sheets:—

> "It cannot be too often and too forcibly impressed on the mind of the ordinary assurer, that the amount of stock in the funds of other securities, which he is pleased to consider as capital available for any purpose, but especially for the purpose of being divided amongst the members, if, in their opinion, it is increasing too fast, *is no guide whatever to the actual condition of the Society.* One company may have doubled the value of its accumulations, and yet be in a state of bankruptcy, by having more than doubled its liabilities: whilst another, with a much slower *apparent increase*, may be in a position to give a large per centage of *bonâ fide* profits out of a fund, which may appear a miserable pittance, when compared with that of its more dashing neighbour"

While the *North British Reviewer*, with whom the reader has now grown familiar, adds the following caution on the bonus question:—

> "It further follows, that in proportion as the rates charged for assurance are high, the surplus, or profit fund will be swelled and aggrandized. In some of the Societies which are still pleased (or we should perhaps rather say, which are compelled by their constitution, which they have no power to alter), to use the Northampton Table of Mortality, the surplus arising annually is very great. In proportion to the amount of such surplus is the power of an Office increased to give one class the advantage over another in the division, and by the declaration of large bonuses to dazzle the public with imaginary benefits. *The amount of the bonuses periodically declared cannot form a true test of the prosperity of any Institution. That amount may arise from using a false Mortality Table, and exacting large rates as much as from getting good lives and fortunate investments*
>
> "It becomes incumbent upon him (the assurer) to consider what will be the best in the long run, and to remember that as, according to a homely phrase, he cannot eat his cake and have it, if he joins a young Office which declares *too large bonuses* during the first few years, while a number of members, by dying off, and yet securing their bonuses, run away with far more than their fair share of profits, he runs a most imminent risk of not only not securing his share of these profits, *but even of losing the capital sum originally assured to him.* We fear that too many Assurance Offices are like spendthrifts, living on the produce of their own *post-obits*; so that the time must most assuredly come when, having lost a certain number of their policy-holders by death, they will become bankrupt. Persons have been accustomed to consider their life-policies as safe as Bank of England notes, and it has been often observed that, except in one or two fraudulent instances, no Life Offices have failed. In saying this," continues the writer, "It is forgotten that their liabilities have to be settled at a distant day, and that too many, like bankrupt merchants, may be apparently in great affluence, because their bills have not come to maturity."

This writer quotes the *Quarterly Review* of October, 1839, in which the then existing Offices were classified under four heads, viz.: of *general stability*, a *salutary state*, *probationary* and *experimental*. Under the first, he includes all Offices that have existed twenty-one years and upwards; under the second, those of fourteen to twenty-one years; under the third, those of seven to fourteen: and under the fourth those of an existence less than seven years. We must, however, caution the reader against placing too much reliance on the age of an Office, without taking other circumstances into account.

We have now passed in review nearly all those outward and obvious considerations regarding the character and position of Assurance Offices, by which persons not familiar with the science of the subject, or the inward working of the Offices, can judge of their relative advantages. This is one great point accomplished; but it is only one. While no person with this knowledge need fall into unsound Offices, it does not follow that it will lead him to appreciate the most advantageous of the sound Offices. As there are different degrees of badness, so there are different degrees of goodness. A person having the knowledge necessary to discriminate between good and bad, will next require to be enabled to chose between good and better. In other words, seeing that there are different degrees, he will desire the best. It is to this latter object that we have more particularly addressed ourselves during the progress of this work; although on arriving at this chapter we have felt it incumbent upon us to bring into a collected form all that appertained to the question of selection. While the majority of Agents may have little need of much that has been said, there are yet many to whom this rudimentary information will be of the greatest service.

By way of indicating the nature of the branch of the enquiry we are now approaching, and by way of introduction thereto, we may ask the reader's attention to the *dictum* of de Morgan:

> "The following considerations might be addressed to any one who intends to insure his life: you are aware that the *premium* demanded of you is avowedly more than has hitherto been found sufficient for the purpose, the reason being that it is impossible to settle the exact amount, on account of our not knowing whether the future and the past will coincide in giving the same law of mortality, and the same interest of money. The surplus arising from this overcharge, for the future existence of which it is hundreds to one, is now at your own disposal, and you must choose between the one Office and another, according to your intentions with regard to its ultimate destination. *Firstly*, if you doubt the general security of the plan of Insurance, and are desirous of an absolute guarantee, independently of accumulations from premiums, there are Offices which will, in consideration of the surplus aforesaid, pledge their proprietary capitals for the satisfaction of your ultimate demand upon them. *Secondly*, if being of the opinion aforesaid, you think the *whole surplus* too much to pay for the guarantee, there are Proprietary [Mixed] Offices which retain a part of the profit in consideration of the risk of their capital, and return the remainder. *Thirdly*, if you wish the surplus premium, as fast as it is proved to be such, to be applied in obviating the necessity of any further overcharges, there are Offices which divide the profits during the life of the insured *by the means of a reduction of premium*. *Fourthly*, if you wish the surplus to accumulate, and feeling confidence in your own life, are willing to risk losing it (the surplus remember) entirely if you die young, on condition of having it proportionably increased if you live to be old, there are Offices which divide all or most of the profits among old members. *Fifthly*, if you would prefer a certainty of profit, die when you may, there are Offices which at once admit new members who die early to a full participation in all advantages. The choice between these several modes must be made by yourself, according to your own inclinations, views of fairness, or particular circumstances."

Or the learned professor might have added, according to your knowledge of the relative advantages of these different modes.

We may now enter a little into the details of several of the most prominent points of consideration, as just put forward.

With respect to the relative advantages of the *Mixed*, *Mutual*, and

Proprietary systems of Assurance, these have been already fully discussed in a chapter devoted to that purpose. We have nothing further to add, and therefore refer the reader back to pages 198 and 210.

Again, on the subject of *bonuses*, we have simply to refer the reader back to pages 307-357.

On the subject of *premiums*, a few additional remarks may be here offered with advantage. We have already, and more than once, referred to the fallacy of "cheap premiums." Still cases arise in which cheapness, combined with security, is a decided advantage. The Tables of premiums, given at pages 272, 273, and 276. afford the means of arriving at the "cheapness." The mode of testing the "security" is a more difficult matter. The usual course is to select some *Proprietary* Office of good standing: although the non-participating branches of the *Mixed* Offices offer, in most cases, equal advantages. But by far the greater number of policies are issued on the participating scale—and here cheapness, unless combined not only with safety but with liberal *bonus* advantages, is an entire delusion. Thus an Office charging very *low* premiums, and giving very small bonuses, or none at all, may be and will be in the end far less advantageous than an Office charging even the highest rates, and giving corresponding advantages. But an Office charging moderate premiums, and making fair bonus additions, is likely to do a larger business than the Offices with the very high or very low rates, because while embodying the idea of safety they suit the convenience of a larger number of persons.

It is possible, however, that with two Offices, *charging the same rates of premium, and being equally secure*, the advantages will vary. The first step towards a solution in such a case, would be to turn to the "Bonus Table," pages 314-318, and ascertain if the same proportion of profits is in each case divided amongst the assured. It may happen that one is a Mutual Office, dividing all its profits, the other a Mixed Office, dividing only a portion; or it may happen, that in all these outward respects these Offices are identical, yet that the bonuses vary considerably. Still, seeking a solution, we should suppose that one of the Offices did a larger business than the other, and perhaps by that means brought down the cost of management to a lower average, and perhaps also secured less fluctuation in its mortality. But it might happen that the Office doing the smaller business gave the best bonuses. In that case our mind would naturally revert to several other circumstances which, in the aggregate, or even individually, might exercise considerable influence. Chief amongst these we should require to know the strictness and faithfulness of the *medical examination*, and whether any other than first-rate lives were accepted. Next we should enquire as to the energy and ability of the *management*, and as arising out of this last the character of the *investments*. These last considerations have indeed much more to do with the success of an Office, and the realization of profits than the mere amount of business effected, or simply the proportion of profits divided, can ever have.

But the question of premiums has yet another bearing. Take the case of two Offices giving equal bonus advantages, but varying in the rate of premium charged. For the purpose of comparison we will take one Office using the English Life Table, with a "charge" of 20 per cent. (as shown at p. 260) and the Northampton Table without any loading, as shown on the same page. Assume two persons, A and B, assure for £1,000 each at age 30. A pays a premium regulated by the English Table, which at the age named would be £24 9*s.* 2*d.* per annum, which we may here define to be a "moderate" premium. B pays the Northampton premium of £26 13*s.* 4*d.* —annual difference £2 4*s.* 2*d.*; so that A might assure for £1,100 for the same premium as B would pay for £1,000, and would therefore, whenever his death may happen, have secured an advantage of £100. Such cases are constantly to be met with in practice.

A comparison of the Tables of premiums furnishes the materials for testing, in various ways, the relative advantages of Offices: but, it must be always remembered, that before any reliable tests can be instituted, the element of security must first be settled. Now, in looking over the rates of the non-participating Offices, we find in several instances that they equal within a few pence those charged by Offices which have for many years declared large bonuses. Now contrast the positions of two persons, assured for £1,000 each; each paying the same annual premium, but the one entitled to bonus, the other not. The annual premium in the instance now before us will be £24 at age 30—the reversionary bonuses of the Office which is before us in this comparison has averaged for a series of years 1½ per cent. per annum, being £15 on the £1,000 policy for each year it has been in force. Now, the expectation of life at age 30 is 33 years, which multiplied by the £15 gives an advantage to the person assuring in the participating Office of no less than £495. This is the reward to be obtained by an intimate acquaintance with the subject of premiums and bonuses, combined with a general knowledge of the elements of safety!

By way of further elucidating the subject of *premiums*, and the relative advantages offered by the different Mortality Tables, we give the following Table of "net" rates for the ages 30, 40, and 50. By contrasting these with the gross premiums actually charged by the Offices, some idea may be formed of what the bonus returns under sound management should be:—

	Age, 30.	Age, 40.	Age, 50.
Northampton Table, 3 per cent.	£2 13 5	£3 7 11	£4 10 8
Carlisle Table, 3 per cent.	1 19 1	2 12 0	3 12 5
Equitable Experience, 3 per cent.	1 18 6	2 10 9	3 11 0
Government, 3 per cent. Males	2 2 7	2 15 7	4 1 0
Government, 3 per cent. Females	1 17 5	2 8 5	3 7 3
English Table, No. 2, 3 per cent.	2 0 9	2 14 11	3 18 6

Offices adopting even the lowest of these scales, with a fair addition of loading, can be worked at a profit. Offices adopting the higher scale should certainly offer corresponding advantages.

What those "corresponding advantages" should be perhaps requires a word of explanation. It does not follow that because one Office using a premium derived from any particular Mortality Table, with a 20 per cent. loading, gives an annual reversionary bonus of 1½ per cent. on the sum assured, that another Office using the same Mortality loaded at 40 per cent., should give a bonus of 3 per cent. If, indeed, the loading were the *only* source of profit such an explanation would not be unreasonable, but as various other sources of profit have been enumerated, which will not be beneficially effected by the higher rates, but probably, in some cases, the operation will be rather the other way, we must take all these circumstances into account, and if 2 or 2½ per cent. reversionary bonus be obtained, the assured must be content. Such a comparison, if pushed to its extent would, in all probability, result in disadvantage to the assured in the high premium Offices: but few persons, however, possess the knowledge, or the materials, for entering upon these fine-drawn investigations; nor is it our present purpose to enter into such minute details.

There is one great disadvantage in conducting comparisons of the English Life Offices, and that is, that the Offices generally do not publish annual accounts and balance-sheets. Those Offices which have been compelled to do so under the original Joint Stock Company's Act, looked upon it as a hardship, and no settled form of account being provided, each Company, as we have seen, has adopted its own form; and in many instances these forms are better adapted to *mislead*, than to furnish any real information. If all the Offices, both old and young, were compelled to render annual accounts, arranged under the same form, a simple test might be applied for ascertaining their solvency or otherwise, and this would be the most obvious method by which to ascertain whether the principles upon which they were founded were sound or unsound. Many of the best conducted Offices *do* publish their accounts in a clear and intelligible form: and it may be regarded as a sign of danger where this *is not done.* Those Offices which do so, reap their reward in a large increase of business.

Failing this ready means of judging of the position and advantages of the several Offices, we have to adopt a secondary, and far more tedious, and less satisfactory course. We have to ransack the authorities, and charge our memory with all the malpractices of which Offices have been found guilty, and also to become acquainted with all those points of danger upon which so many Offices have struck and foundered. Having acquired this information, and also made ourselves familiar with those principles which alone can insure the road to success, we have to apply, as best we can, the knowledge so obtained to each particular Office we desire to scrutinize, with a feeling constantly before us that some small error in judgment on our part, or some accidental occurrence to the Office, may in a moment overthrow, and render useless all our deductions and conclusions. For this, in the present state of matters, the reader has no help.

We may mention one simple test which we have applied to many Offices of whose soundness there can be no possible doubt. It is that the accumulated funds of such Offices stand in the proportion of *from four to five times the amount of their annual income from all sources.*

There are many young Offices of which such results could not be expected, except through the aid of subscribed capital, and which may nevertheless be sound; but no Office which *has such accumulations need be doubted.*

It would not follow that an Office with such funds would be the most advantageous to assure in. It might indeed happen, that a portion of its accumulations had been held back from the pockets of the assured. But at any rate such an Office would be *safe.* To judge of the relative advantages of Offices, a knowledge of the principles upon which they are based will be necessary. But it would not be necessary to know so much of the dark side of the question.

This chapter has already exceeded the limits intended for it, and it must now be brought to a close. A portion of its purpose, however, remains to be accomplished. This is to bring into a concise form not only all that has been advanced on the subject of selection in this chapter, but all that in any way bears upon it throughout the progress of the work. This we purpose to do in a form useful for present and future reference, namely, by a series of questions, or a catechism under a simple form of arrangement, and marked with references to the parts of the work where the points involved in each particular question has been discussed. Thus all the points will become connected, their bearing will be more fully understood, and the work will become what it was intended to be—essentially a book of reference.

CATECHISM

Of the points upon which Insurance Agents should be informed, and should be able to impart information.

PRELIMINARY QUESTIONS.

1.—On what Table of mortality are the operations of the Society based? 150-180, 260-263.
2.—What "loading" is added to the *participating* rates for expenses and contingencies? 260, 263, 283, 328.
3.—What on the *non-participating* rates? 285.
4.—Is the loading *equal* at all ages? 168, 261.
5.—What rate of Interest is assumed to be made on its investments? 193, 196, 198, 263, 281.
6.—Is the Office *Mutual, Mixed,* or *Proprietary?* 198-205, 210-214.
7.—What are the legal powers under which the Office is founded and protected? 58, 212, 213, 402.

IF THE OFFICE IS *MUTUAL* THE FOLLOWING SPECIAL QUESTIONS TO BE PUT.

8.—Has, or had, the Office an original *guarantee* capital? 206-209, 211.
9.—Was that fund raised by *Loan* or *Shares?* 214.
10.—If by *Loan*, has it been repaid? 214.
11.—If by *Shares*, what rate of Interest is guaranteed, and what rate paid; and is any bonus added? 209.
12.—What proportion of the surplus or profits is carried forward at each division for the purpose of a permanent guarantee fund? 205, 211, 300.
13.—What is the present amount of the guarantee or reserve fund as distinguished from the general funds of the Society? 319.

IF A *MIXED* OFFICE, THE FOLLOWING SPECIAL QUESTIONS WILL APPLY.

14.—What is the nominal capital of the Company, and in how many shares? 381.
15.—Are all the shares subscribed for—if not, how many? 54, 207, 212.
16.—What is paid up per share? 381.
17.—Is the capital fund kept or invested distinctly from the general funds of the office? 217.
18.—What rate of interest is guaranteed, and what paid to the shareholders? 209.
19.—Is *interest* paid upon the full amount of the shares, or only upon that part actually paid up? 209.

20.—Is there any power or compulsion under the Deed or Act, to purchase the shares and made the Office Mutual?

21.—If so, when, and on what terms?

22.—Is any contingent fund or "rest" provided for in addition to the paid-up capital, or has any been reserved?

23.—Is there any power for increasing the capital?

IF THE OFFICE BE STRICTLY *PROPRIETARY* ASCERTAIN THE FOLLOWING POINTS.

24.—The nominal capital? 381.

25.—In how many shares? 381.

26.—How much subscribed, and by how many persons?

27.—How much paid up? 217.

GENERAL QUESTIONS APPLYING MORE OR LESS TO ALL ASSURANCE OFFICES.

28.—Is there any power or provision in the Deed or Act limiting, or intending to limit, the liability of the assured if the Office be *Mutual*, or of the shareholders if *Mixed* or *Proprietary?* 213, 380.

29.—Are there any powers, provisions, or stipulations in the Deed or Act contrary to, or presenting any unusual variation from, those usually belonging to, or employed by Societies of its class. 299.

30.—Has the rate of mortality actually experienced equalled or exceeded that indicated by the Mortality Table employed? 219, 281, 286.

31.—Has the rate of *interest* realised on the investments equalled, or exceeded, on the whole that assumed to be realised at the onset? 219, 281.

32.—Have the legal powers of the Office been altered since the commencement? 380.

AS TO DIVISION OF PROFITS.

33.—How often does a valuation for profits take place? 295.

34.—What proportion of the profits is given to the assured? 299.

35.—Does the other portion go entirely to the shareholders, or is any portion retained for a reserve fund? 299-300.

36.—Do *all* who are assured under the participating scale participate at each division of profits, or only those of a certain term of membership? 301.

37.—Is the *Mortality Table*, upon which the operations of the Society were based, used in the valuations for surplus? If not, what Table? 291, 331.

38.—In the valuations, is the *net* premium only valued on the asset side? 332.

39.—If the gross premium be valued, is it placed on both sides of the account? 332.

40.—If only on one side, is a corresponding charge (based on the past experience of the Office) placed on the other side? 335.

41.—On what principle is the surplus apportioned—in relation to the premiums paid? By a per centage on the sums assured? or by what other method? 303, 313.

42.—If by a per centage on the sums assured, does it extend also to all previous bonus additions? 304.

43.—If by a per centage on the premiums paid, what has that per centage averaged? 303.

44.—If by a per centage on the sums assured, what has been the rate? 304.

45.—How soon was the first division of profits made after the establishment of the company? 381.

46.—Has there been any change made in the time or manner of dividing the profits?

47. Has the rate of bonus participation increased, decreased, or remained stationary? 286.

48.—State the extremes of the variation, if any?

49.—Does any class of the members receive any special advantage by reason of long membership, or otherwise? 301.

50.—Is any portion of the ascertained surplus applied to sickness, educational, or endowment funds, or to any other purpose foreign to the purpose of Life Assurance? 244.

51.—If so, what portion, and to whom?

AS TO PROGRESS.

52.—How long has the Office been established?

53.—What is the total number of Life Policies issued?

54.—Insuring what amount?

55.—How many annuities have been granted?

56.—How many are now in force?

57.—Has the amount of business been progressive, stationary, or retrogressive?

58.—How many policies were issued last year?

59.—Have the expenses of management increased or decreased since the commencement? 216.

60.—What is their present per centage on *premium* income? 216-220.

61.—Have there been any circumstances connected with the progress or history of the office of more than ordinary interest?

62.—Has the office amalgamated with, or taken into amalgamation any other Company or business?

AS TO FINANCE.

63.—Does the Office publish a financial statement or balance-sheet?

64.—What is the income of the Office from premiums? [394, 400.

65.—What from *interest* or investments? 193, 196, 198.

66.—What is the amount of the total *accumulated funds* of the Office including the paid-up capital, guarantee, or reserve funds? 324.

67.—How are the funds generally invested? 196.
68.—Has the Office at any time sustained any serious loss on its investments?
69.—Is any portion lent on *personal security*, and upon what conditions? 243.
70.—Is any portion of the premiums allowed to remain on *credit* in the hands of the assured? 240.
71.—What is the total liability on the total existing policies, and the bonus additions made thereto?
72.—How have the majority of the members applied their portion of the surplus— to cash bonuses?—to reversionary bonuses, or or to reduction of the premiums? 303.
73.—Is there any special stipulation or limitation as to the application of the bonus? 314.
74.—Have the expenses of management, losses, or other contingencies, exceeded on an average the sum provided by the loading of the premiums? 216.
75.—What amount has been received for the purchase of ANNUITIES?
76.—Has that amount been specially or separately invested? 291.
77.—If so, at what rate of interest?
78.—What is the total amount of claims paid under the Life Policies?
79.—What bonus additions have been added to claims paid?
80.—What was paid last year?
81.—What were the expenses of management last year?
82.—Do all the expenses of management fall upon the life funds, or is there a fire, annuity, or other branch to bear a portion? 248.
83.—Is there any fixed or guaranteed scale for paying out *surrendered policies?* 232.
84.—Has the Office ever, or does it now, assure *diseased* or *unsound* lives? 326.
85.—Does the Office receive deposits of money carrying interest? 407.

AS TO CONDITIONS.

86.—What are the limits of travel or residence allowed by the Company? 230.
87.—If policies become forfeited by exceeding these bounds, by what means can they be renewed? 231.
88.—Are policies forfeited by suicide, not *felo-de-se*, or by death from duelling, or the hands of justice? 232.
89.—Under what other circumstances do the policies become forfeited?
90.—Do the policies purport to be *indisputable?* 237, 247.
91.—How many days of grace are allowed for payment of premiums?
92.—Does the Office guarantee to pay under the policy, if death occurs during the days of grace?
93.—Within what period may policies, lapsed by reason of the non-payment of premium, be revived, and upon what terms? 234.
94.—Are there any special conditions differing from those above referred to; if so, what are they?
95.—How soon after *proof of death* are the claims paid? 246.

96.—What is considered proof of death?
97.—Is the *substitution* of lives permitted? 248.
98.—Has the Office ever *disputed* a policy or policies? upon what grounds? and with what result?
99.—By whom are the Directors elected?
100.—By whom the Auditors?

It will be urged, no doubt, that Agents will not be prepared to answer many of these questions off-hand. Many of them, indeed, do not admit of such treatment. They will vary from time to time; but the Agent may insist upon being supplied with answers to those he deems most important. Failing this, he has his alternative. So the assured, or the person intending to assure, may in his turn apply to the Agent for information on such points as he deems most important—and failing this, he has *his* alternative! We trust that this catechism may be the means of causing wholesome enquiry; and that the Offices in process of time will see it to be clearly to their interest to afford such information. Those who cannot stand this test had better put their houses in order, or prepare to be driven from the field by more enterprising competitors.

The spirit of seclusiveness, which has long been a characteristic of public Companies is now rapidly passing away. Nothing is more dangerous in principle, or has been more fatal in practice, than the desire to keep shareholders and others interested in public Companies from a knowledge of the true position of their affairs. Even if misfortunes have occurred, a timely knowledge of them may prevent, or greatly mitigate, the evil consequences. Two or three of the older Offices which have recently found it desirable to amalgamate, or rather to transfer their businesses, have been noticeable for withholding their accounts from the public, Both agents and the assured, may do much to remedy such evils in the future. by requiring copies of the annual accounts, which, in all Companies, are made up for the information of directors and shareholders. The *voluntary* publication of detailed annual accounts may always be looked upon as a great recommendation to an Office. It is a public guarantee of good faith.

CHAPTER II.

PUBLICATION OF ACCOUNTS.—LEGISLATION FOR INSURANCE OFFICES.

> "A settled system of actual annual audit will probably ere long be instituted, and such returns be made in a statistical form, as will enable all the sound Offices to establish beyond any doubt their ability to fulfil their engagements, and to return a large surplus to the persons who insure."—*Dr. Farr's Twelfth Report.*

The above assurance from Dr. Farr was calculated to afford considerable satisfaction to all those who were in any way interested in the management of sound Offices, and corresponding dismay to those associated with Offices of another class. Unfortunately this promise has never yet been realized. Not, certainly, because the necessity did not exist. *That* is admitted in all quarters where impartiality may be expected. It is rather because no one has been found with a sufficient knowledge of the subject, combined with independence and influence, to carry such a measure through the House. This affords another confirmation of the adage that what is everybody's business is nobody's business. The hour and the man have not yet arrived.

We have already sufficiently declared ourselves against any restrictive, or perhaps we should say against any prohibitative measures. What is required is protective, and not restrictive, legislation. In the management of Assurance and Insurance Offices, there are certain well-known conditions necessary. These are, speaking generally,—1. That the expenditure out of premium income should in no case exceed the proportion which has been provided in the calculation of the premiums (as already explained) for that purpose. 2. That some guarantee should be provided for fluctuations which may occur until the Office has secured a sufficient share of business to bring it within the operation of the well-known laws of average. Both these conditions may be met, in the first instance, by a subscribed capital or guarantee fund, out of which either *excess of expenditure* or *excess of loss* may be provided. And a further element of security may be provided in this wise: that while it is admitted that no amount of subscribed or guarantee capital, would provide for *continuous* excesses in both or either of the particulars named; still, that accounts may be, from time to time, rendered, which will enable any competent person to determine when an Office *has become self-sustaining, and whether it continues to be so.*

The actual requirements of the assuring public then become reduced into very small compass:—first, *means of protection;* second, *means of defence.*

The road to these objects appears simple and unmistakeable:—

1. That no Company shall hereafter be constituted without some sufficient pecuniary guarantee for the protection of its early members; and—
2. That periodic accounts and returns shall be rendered of such a character and under such an arrangement as to furnish means for testing their continued solvency or otherwise.

Neither condition will succeed without the other. The penalty for non-compliance should be imprisonment to the Managers and Directors. The Act of 1844 contained no such provisions as these now named, and no penalties for disregarding the provisions it did contain. The Companies' Act of 1862 does make some attempt to secure information for those who desire it. It enacts (sec. XLIV.) that every limited Banking Company, and every Insurance Company, and Deposit, Provident, or Benefit Society registered under its provisions, shall, before it commences business, and also on the first Monday in February and the first Monday in August, in every year during which it carries on business, make a statement in the form marked D in the first schedule to the said Act, and as near thereto as circumstances will admit, and a copy of such statement shall be put up in a conspicuous place in the registered office of the Company, and in every branch office or place where the business of the Company is carried on, and if default be made in compliance with the provisions of this section, the Company shall be liable to a penalty not exceeding five pounds for every day during which such default continues; and every Director and Manager of the Company who shall knowingly and wilfully authorize or permit such default shall incur the like penalty. It is provided that every member (shareholder) and every creditor of any Company mentioned in the preceding section shall be entitled to a copy of the above-mentioned statement on payment of a sum not exceeding sixpence. How far a policy-holder may be considered a creditor has not, we believe, been yet determined.

The particulars required to be stated in form D, Schedule 1, above referred to, are as follows:—

1. The capital of the Company is £ divided into shares of £ each.
2. The number of shares issued is
3. Calls to the amount of £ per share have been made. under which the sum of £ has been received.
4. The liabilities of the Company on the first day of January (or July) were—
    Debts owing by sundry persons to the Company
        On judgment, £
        On specialty, £
        On notes or bills, £
        On simple contracts, £
        On estimated liabilities, £
5. The assets of the Company on that day were—
        Government Securities (stating them) £
        Bills of exchange and promissory notes, £

Cash at Banker's, £
Other securities, £

Further, it is indispensable that all Companies having their capital divided into shares, and availing themselves of the Limited Liability Law, shall make out and return to the Register Office of Joint Stock Companies, Sergeant's Inn, Fleet Street, at least once in every year, a list of all persons who, on the fourteenth day succeeding the day on which the ordinary general meeting is held, are members (that is, shareholders) of the Company, and such list shall state the names, addresses, and occupations, of all the members (shareholders) therein mentioned, and the number of shares held by each of them; and shall, in addition, state the following particulars:—

(1.) The amount of the capital of the Company, and the number of shares into which it is divided.

(2.) The number of shares taken from the commencement of the Company up to the date of the summary.

(3.) The amount of calls made on each share.

(4.) The total amount of calls received.

(5.) The total amount of calls unpaid.

(6.) The total amount of shares forfeited.

(7.) The names, addresses, and occupations of the persons who have ceased to be members (shareholders) since the last list was made, and the number of shares held by each of them.

This return may be seen at the office of the Registrar by any person on the payment of a fee not exceeding one shilling; and any shareholder may inspect the Register of shareholders at the offices of the Company daily (except during thirty days in the year when it may be closed) without payment of any fee, and any other person on payment of a fee not exceeding one shilling.

The intention of the Legislature being, that by means of such information all persons having any interest in the prosperity and security of the undertaking may have ready means of testing the same.

By the same Act it is provided that the Board of Trade may appoint one or more competent Inspector to examine into the affairs of any Company (registered under that Act), and to report thereon in such manner as the Board (of Trade) may direct, upon the application (in the case of a Company having its capital divided into shares, and not being a Bank) of members holding not less than one-fifth of the shares of the Company from time to time issued. But any such application must be supported by such evidence as the Board of Trade may require for the purpose of showing that the applicants have good reason for requiring such investigation to be made, and that they are not actuated by malicious motives in instituting the same. The Board may also require security for costs before appointing Inspectors.

It is clear that in the framing the provisions of this Act the Legislature simply desired to furnish the machinery necessary to enable the public to obtain information; but the machinery must be set in motion by the public or the parties interested.

It will be observed that many of the foregoing provisions apply only to Companies whose capital is divided into shares, or, in other words, mixed or proprietary Companies. The Mutual Offices are left very much to their own devices, and many of them prefer to register under the Friendly Societies' Acts; although we are of opinion that any advantages they may appear to gain by this course are more than counterbalanced by the restrictive provisions of those Acts.

It may be useful to state that on the same day on which the Companies' Act of 1862 was passed, there was also passed the Industrial and Provident Societies' Act (25 and 26 Vic. c. 87) which Act repealed the Industrial Provident Societies' Act of 1852, and all Societies registered thereunder were bound to register under this new Act of the same title. No member of a Society registered under this Act can have any policy or interest in the Society beyond the sum of £200, so that the provisions of the Act will not apply to Life Companies higher than the Industrial class. Indeed it appears to have been designed, as its title would imply, for Provident Societies only, and it gives to the Societies registering under it the advantages of the Friendly Societies' Acts to the following extent, viz:—

Exemption from stamp duties and income-tax.
Settlement of disputes by arbitration or justices.
Compensation to members unjustly excluded.
Power of justices or County Courts in case of fraud.
Jurisdiction of the Registrar.

And, in addition, it also embodies the important provision of the Friendly Societies' Act of 1854 that any member may nominate the persons who are to receive the benefit of his insurance deposit, or otherwise, at the decease of such member, and the person so nominated can receive such benefit without the expense and trouble of administration.

It may be regarded as certain that our Government do not, at least for the present, contemplate any special legislation for Insurance offices beyond that now indicated; and we cannot but feel in this respect how much we are behind the United States, where departments are specially organized for the supervision of the offices, and the protection of the policy-holders. We trust the increasing intelligence of Agents and the Assured may in some sort compensate for the much needed protection; and the increasing sagacity of the general public may prevent the undue multiplication of new offices, except in cases where they have a good solid foundation, and meet some recognized want, and promulgate some new and really advantageous feature.

If the promoters of the twenty-five Assurance Offices whose accounts were published in 1852, and shewed an expenditure of £ 287,339 (*exclusive* of £ 87,989 paid for claims during the 3½ years embraced in the accounts) out of £462,302 received in premiums and for annuities—or out of £745,010, if paid-up capital be included—if, we say, the promoters of the twenty-five Offices, shewing these results, had been called upon to show some reasonable grounds for calling these Companies into existence, it is more than probable that the greater portion of them would never have got beyond the preliminary prospectuses of their projectors; and a considerable part of the 81 per cent. of the premiums expended might have been paid to other Offices where, at least, some regard would have been had to the purposes for which such premiums had been paid.

The figures just quoted furnish but a faint idea of the enormous sums which have been swallowed up by the bubble Companies founded under the Joint Stock Companies' Act of 1844. In the *Times*, towards the close of 1856, was given a far more extended list of Companies, shewing, in the aggregate, results even worse than those just quoted. Here are the remarks which accompanied the Table:—

> "Out of 54 Offices comprised in the list, 30 show an expenditure in excess of premiums and interest received, and 6 an expenditure not only in excess of premiums and interest, but also of capital paid up. That is to say, *in 30 cases the claims on policies, the outlay for advertising, the salaries of the Directors and clerks, and the dividends occasionally distributed, have more than absorbed all the receipts of the Companies, and have left them in debt either to general creditors or to capital, without the slightest accumulation having been made to meet the liabilities on the outstanding policies on which the premiums have been received, and the force of which increases with every year of their duration.* Of the remaining 24 Offices the expenditure of 22 has been below their receipts, *and 2 have rendered accounts so unintelligible as to defy scrutiny* Of the 22 Offices which have kept within the limits of their receipts, *several will be found to be only just within the verge, even after an existence of five or six years, and the number that can be considered to exhibit other than discouraging features is thus rendered very small.* It will doubtless be urged in favour of those which appear in the worst position that their accounts in most cases extend over a shorter time than the others, and that they may hope, when they have attained an equal age, to reap the benefit of the risks they have previously run. The value, however, even of this slender argument is impaired by the fact that 13 Offices appear to have been compelled to dissolve, *after having found that this reward of a reckless expenditure cannot be relied upon, while 50 have found it either unnecessary or inconvenient to send in any returns whatever. It is, moreover, a deep disgrace that Institutions whose fundamental object is professedly to encourage provident habits among the people, and to induce them to guard against all contingencies, should set a glaring example of dependence upon the lowest system of competition that has ever yet been witnessed.*"

And again:—

> "From the above statement it also appears that the total expenditure and claims have averaged on the net premium, receipts, etc., 84·92 (nearly 85) per cent.; including capital, 63·85 (nearly 64) per cent. The claims alone on the net premium, etc., average 23·80 per cent. *These per centages should probably be even greater, as in many instances annuity purchase-money is merged in the premium receipts.* In some instances it was found impossible to give the available funds invested and in hand with any degree of accuracy, *from the vague and unsatisfactory manner in which the accounts are stated.* The Companies carrying on life and fire business are not included in the above statement, *as in many cases the transactions are so amalgamated as to preclude any investigation of the separate departments.*"

Does it not seem strange that a class of the most valuable of all our public institutions should be left, as it were, open to the ravages of any unscrupulous speculator who may please to practise upon the credulity of the public? The capital involved in the aggregate of the Assurance and Insurance Associations of the United Kingdom fully equals that employed in the Banks; and the sums assured in the several Offices is, at least, equal to the capital locked up in railways. Why, then, is our legislature so indifferent herein? "If a public audit is called for in ordinary Companies, (remarks Dr. Farr) and would be useful in Banks, from which the depositor *can withdraw his deposits in a day*, something of the kind is required in Life Offices, which engage to pay *their* depositors at the end of twenty, thirty, forty, fifty, or sixty years! In the keen competition for present premiums," he asks, "is there not some danger that, without such a check, the expenditure, and the promises of benefit at that distant day—the end of the depositor's life—may be too liberal?" We have already shown that these fears are too well founded.

We need not follow up the arguments of Dr. Farr, as they have been mostly already anticipated. He reminds us, indeed, that the finance of a Life Office differs essentially from that of any other Company:—"*While it is advancing to insolvency*, its income may exceed its outgo for many years; or it may have a large surplus of misappropriated capital, while its annual expenditure largely exceeds its income. *An ordinary balance sheet is no test to its financial condition; and by using bad Tables, assuming different rates of interest, operating on different principles, the results of valuations, as they are called, may be made to differ to the extent of many thousands—hundreds of thousands of pounds.*"

The returns he would require from the Companies should embrace "not less than the following particulars." (1) The number of policies in force at the beginning and end of the year; (2) the number of new policies granted in the year; (3) the number of policies lapsing by death, expiry, discontinuance of premium, and other causes; (4) the number of persons assured living and dying at each year of age; (5) the sums assured; and (6) the premiums payable by persons so assured at each age.

These requirements very nearly correspond with those of the Select Committee on Assurance Associations (1853), which it may now be desirable to glance at. The following is the portion of the report relating to the point now before us; the Committee having, in the preceding paragraph, admitted that "hitherto those accounts as published have been of almost unsatisfactory character":—

> Your Committee, therefore, would recommend that it shall *be imperative upon each Company to make a complete investigation into its affairs at least once in five years, as is usually proscribed by their deeds of settlement, and at such time so prescribed, which shall show a complete valuation of their risks and liabilities, and of their assets to meet the same; and that all such valuation accounts, which may be made for the information and use of their proprietors, shareholders or members, shall be registered in the office of the registrar; and that in each intermediate year between such periodical balance sheets or valuation, there shall also be registered a statement containing authenticated information on the following particulars:—*
> The amount of receipts during the year for premiums on policies.
> The amount of expenses during the year.
> The number and amount of new policies issued.
> The total number and amount of liabilities on all current policies.
> The total amount of premiums receivable on the same.
> The whole amount of capital, distinguishing the manner in which invested.
> How much in cash.
> How much in Government securities.
> How much in mortgage upon real estate.
> How much in other securities, specifying their nature.
> The average rate of interest received upon each class of investments.
> The amount of such investment, if any, on which the payment of interest is in arrears.

> The table of mortality and the rate of interest used in calculating the premiums.
>
> The evidence which your committee has obtained leads them to believe that some such general statement would be of much greater utility in enabling the public to come to a correct judgment as to the condition of an Office than any form of account that could be adopted. *In addition to the above, in case of Proprietary Companies, the amount of subscribed capital should be stated, and also the amount actually paid up, and how invested.*
>
> It has been brought to the attention of your committee that the business of Assurance Offices is becoming every year of a more varied character.
>
> This your committee regard as the necessary result of the advancement of the science on which it is based; but there is a class of business which some Offices have undertaken, viz.:—*that of receiving deposits of money at interest, which appears to your committee totally inconsistent with the business of Life Assurance.*

If any additional proof should be required of the necessity for some new and effective legislative interference, it is found in the fact, of the scandalous manner in which the provisions of the former Act have been not simply abused, but positively ridiculed. Here is the copy of a balance-sheet, actually registered in pretended accordance with the provisions of that Act:—

*Balance Sheet of the * * * Life Assurance Company, from 1st October,* 1849, *to 30th September,* 1850.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
Total Receipts as per Cash Book	65,799	10	11	By total Expenditure and Investment, as per Cash Book	63,154	0	4
				Balance at Bankers	2,645	10	7
	£65,799	10	11		£65,799	10	11
TO LIABILITIES.				TO ASSETS.			
Liabilities	109,715	15	1	To Assets, including Balance at Bankers	109,715	15	7
	£109,715	15	1		£109,715	15	7

All the purposes for which a balance-sheet can ever be required are here openly set at defiance; and yet the Company making that return, complied with the letter, if not the spirit, of the Act. Is it not, we repeat, time something was done? We hope, when it is done, it will be done effectually and well. Nothing, however, can be done well, which is not done *impartially*. Legislation, therefore, should reach *all* the existing, as well as all future, Companies.

CHAPTER III.

AGENTS' CHAPTER.

Containing special instructions for Agents as to making their agencies profitable.

Although we have endeavoured in the progress of this work to give the best information, and to refer the reader to the best authorities—or rather we may say, as we could not expect Agents to possess, to any extent, the rare and costly works which have been constantly referred to in these pages, to introduce and familiarise the reader with them—and thus to enable him to become conversant with at least so much of the theory and practice of Life Assurance as may be necessary to discriminate between good and bad—between sound and unsound—offices, there still remains, much, very much, unsaid, particularly with respect to the best methods of making agencies successful, and therefore *profitable.*

The following calculations given by Mr. Henry Lake, in his clever pamphlet "Why is not Life Assurance Universal?" written several years since, applies to this division of our subject:—

There are 170 Assurance Offices, each of which has, taking an average, 200 agents. The local agents therefore amount to 34,000. Now, if these agents each sent to their central Office one new policy only monthly, it would give 408,000 policies in a year, or 208,000 more than the whole number of lives at present assured. The whole number of policies effected annually do not amount to 34,000.

Of course a great change for the better has taken place since Mr. Lake wrote this; but still an enormous increase of business may yet be secured by proper and systematic working. Many districts of the country are almost unexplored for the purpose of Life Assurance. Agents, or suitable persons to become agents, in such districts should be up and doing. With a first class Office, some knowledge of the subject, and a determination to succeed, many agencies equal to the best that now exist may be formed.

With respect to the best method of making an agency successful, so much has been said and written that really nothing new can be said. Acting under this impression, we selected from amongst many publications, all having the same object in view, a series of papers which some years since appeared in the *Life Assurance Record*, and were subsequently republished in the *Agent's Hand Book*. These are both, long since, out of print. We have condensed and selected from these papers much that is valuable and important to agents, as a careful perusal of two or three pages at the close of the chapter will testify.

Of the elements of success, *knowledge of the subject* appears to us to stand first and foremost. However large the business an Agent may be doing, if he makes himself thoroughly conversant with the science of the subject, he will do more with this knowledge, which it is the object of the ASSURANCE GUIDE AND HAND-BOOK to enable him to acquire. He can acquit himself with credit before the learned and the unlearned. He can also throw an interest around the subject which his less informed competitors can never command. And he can also the better select from amongst the several methods of assurance that best suited to the wants, circumstances, or necessities of his clients. Such an Agent need fear no amount of rivalry, provided always, that he represents a sound, respectable, and well-conducted Office.

There is one especial point upon which we must offer a word of caution, even at the expense of arousing some "official wrath,"—and that is, do not rely for the success of your agency upon the mere distribution of the "prospectuses." All Agents who have tried it, know how utterly this system fails. How often have we heard provincial Agents exclaim, that they have issued all their prospectuses, and "have not received a single proposal for assurance." No doubt where persuasion is required, the direct appeal of the tongue, backed by the knowledge and tact of the speaker, will be by far the most effective mode of procedure. Still, it occurred to us as strange, that Offices should persist in issuing, and Agents distributing, tens of thousands of prospectuses, without any really practical results. And so curious did we feel upon the point, that some few years since, we collected the prospectus of every existing Office—then between two and three hundred—and (will the reader believe us ?) carefully *read them all!* The result may be told in a few words. *Anything more unfitted for the particular object in view it would be impossible to conceive.* For the most part, they are crude, illogical, and, in many cases, perfectly unintelligible! No small number of them commence by stating how trifling a proportion of the assurable classes are assured. In other words, implying that the principle is, to say the least, not popular. Fancy a tradesman hitting upon the expedient of inviting customers to his shop, by posting up over the door a notification of the small amount of patronage he enjoyed! Would not every one button up his pocket and pass on? Apply the rule to the sale of insurance policies! Any one who has studied human nature knows how prone all are to *follow*, but how few have the courage to *lead*. Why then hold Life Assurance forward as the exception, and not the rule, and try by this unusual process to secure converts? Before Life Assurance becomes really popular, we shall expect to see a great change in the character of insurance prospectuses.

But while most of the compilers of prospectuses are content to make them simply catalogues of rates, tables, limitations, and penalties—rendered still less uninviting by the free use of technical terms—there are some of a precisely opposite character. These go quite to the other extreme; and, in the plenitude of their promises, promise "everything to everybody!" It was of this class of prospectuses that Mr. Babbage with justice remarked—"Some of these productions would appear from their composition rather to be addressed to those thoughtless people whose credulity is periodically duped by the splendid promises of the lottery, than to a class whose forethought and prudence are so decidedly evinced by the very circumstance of their desire to provide against the uncertainty of life." It was in reference to *this* class, and to those who combine "cheap premiums" with their other manifold advantages, that Professor de Morgan said, "The magnificent style in which the prospectuses frequently indulge might often remind their readers of the unparalleled benefits which are promised by another description of traders who vie with each other in describing the rare qualities of their several *blackings!* If there be in this country (he adds) a person whose ambition it is to walk in the brightest boots to the cheapest Insurance he has my pity . . . . *Public ignorance of the principles of Insurance is the thing to which these advertisements appeal.*" Happily this evil is gradually dying out; for, of the two, it is by far the worst. Better that a person should never assure at all than become the victim of an Office compelled to resort to such disreputable puffs!

But there is the middle course. Nothing can be much more instructive or amusing than the mortality observations upon which the science of Life Assurance is built up. The Manager of an Assurance Office is supposed to have this knowledge at his fingers' ends. The Actuary must have it. Why not then, apply it to illustrate the *uncertainty of individual life* as it is employed, on a larger scale, to exhibit the *certain* average of life to the masses. *Then* people would seek Life Assurance on its merits. *Then* its principles would become appreciated, and its practice popular. We hope soon to see a change in this direction. We now introduce the reader to the papers referred to, and bid the agents "God speed" in their good work!

AGENCIES.

THE PRACTICAL WORKING OF INSURANCE AGENCIES.

As regards the successful working of *Agencies*, there can be little doubt that the success of an Agency depends *almost entirely upon the Agent himself*, as however excellent the principles and great the advantages of a Company, it will avail but little in a provincial town, unless these advantages be well made known, and continually kept before the persons most likely to assure their lives. The great element of success in this matter appears to be comprised in the one word—PERSEVERANCE: and that a good life agency is well worth the pains necessary to make it successful may be readily understood, when it is considered that if a life policy is once effected, the *average* length of time during which it continues in force, and during which the Agent is consequently receiving his commission upon it, may be stated at over twenty-five years; and supposing therefore that a policy is obtained which returns a commission of £1 annually, and which is supposing but a moderate amount assured, the value of the commission on this one policy, with compound interest, at the end of twenty-five years is very considerable. It is also to be borne in mind, that when a certain number of assurers are obtained, their example tends greatly to facilitate the effecting of other policies.

That the results of an agency depend more upon the agent than even upon the nature and advantages of his Company, is clearly demonstrated by the numerous instances in which a considerable business is done by the agents of Companies whose claims upon the public are by no means powerful; while in the same town another Office, offering the greatest and most solid advantages, effects scarcely a policy.

When a person obtains the agency of an office, and finds it more difficult to effect policies at first than he imagined, he too frequently puts his papers *carefully away in a drawer*, and determines to wait until some new one applies to him, and, as a natural consequence, his neighbours, instead of coming to him, resort to some other agent in the town, who takes a more active interest in the subject; for the ordinary extent of knowledge possessed by the public upon the subject of Assurance, is certainly not sufficient to carry business into the hands of an agent *who leaves unexplained the merits of a first-rate Office*, while *another agent takes care that the advantages of his Company* (fewer though they be) *shall be kept before the eyes of every one in the town.* THIS EXPLANATION OF THE ADVANTAGES OF THE PARTICULAR COMPANIES REPRESENTED, TOGETHER WITH THE VALUE OF ASSURANCE AS A PRINCIPLE, IS UNDOUBTEDLY THE GREAT ELEMENT OF SUCCESS IN AN AGENCY. There is scarcely an Office that does not offer *some* advantages, which, if well brought out by the agent, may serve to increase his business—such as stability and security—large returns of profits, or low premiums—various modes of effecting Assurance—strictly honourable conduct, &c., &c.

Persons who hold an agency without having quite the same advantages upon the score of rank and influence as some more successful agent in the neighbourhood, are apt to imagine that this success is entirely the result of his more influential position. It may, however, be asserted with safety, that to work a Life Agency successfully, provided the agent's character be such as to entitle him to the respect of his neighbours, only requires a knowledge of the general principles and application of Life Assurance, *a thorough knowledge of the peculiar advantages offered* by his office, and PERSEVERANCE IN MAKING THEM KNOWN. But experience tends to prove that, however well an agent may distribute prospectuses, or exhibit a show-board, or advertise for his Company, unless he follow this up by personal communication and explanation, he will not effect his object.

There are in every town numbers of persons who have never entertained the subject of Life Assurance for a moment, but yet whose families stand as much in need of its protection as their houses and property require to be secured against fire, which the same persons would on no account neglect.

We cannot leave this subject without endeavouring to impress upon the minds of all persons holding the agency of a Life Office, the importance and desirableness of their setting a good example to their friends, by assuring their own lives, even if their circumstances fortunately render it unnecessary, as a provision for their families. A policy in a good Office may always be looked upon as a profitable investment of money, as, after a number of premiums have been paid, it becomes a marketable commodity; *and the confidence inspired by an agent assuring his own life, frequently produces effects which repay fourfold the premiums on his policy.*

It would seem at first sight scarcely necessary to suggest to provincial agents the desirableness, and, indeed, necessity for their being tolerably well informed upon the subject of Life Assurance, *and especially as to the peculiarities, methods of Assurance, and advantages offered by their respective Offices; yet there is little doubt that to this cause may be traced in many instances the want of business.* An agent who intends really to prove himself of utility to his Company, and to make his agency valuable to himself, must not be content with merely reading over his official prospectus, and making himself acquainted with the rates of his Office. To carry out properly the objects of an agency, the agent should make himself master not only of the principles of Assurance, in order to explain the advantages and utility of the system, but should also be sufficiently conversant with its details and applications, to be able to arrest attention, and interest his neighbours, and also to assist them in selecting a method of Assurance suited to their particular circumstances.

We would strongly advise our readers who may hold agencies, if there be any points connected with their business that they do not clearly comprehend—such, for instance, as the various methods of Assurance offered by their office—the mode of dividing profits, &c., &c.—not to remain in doubt, but write at once to the Secretary or Manager of the Company for information, which we are certain would be at all times courteously and promptly given.

The points to which we would venture to direct the attention of agents, as being more particularly suited to bring home to other persons the value of the subject, and which we would suggest their making themselves conversant with, are, the general applicability of Life Assurance, the great variety of situations in life to which it is adapted, and, indeed, the small proportion of persons who would not in some way or other derive benefit from it. The intention and peculiar value of the different modes of Assurance, such as participating and non-participating scales—ascending and descending scales—single and joint Life Assurances—survivorship Assurances—and also (where they are granted by the Company) with immediate and deferred annuities, family endowments, &c.

In provincial towns, from the inhabitants being so much better acquainted with each other's circumstances than in large cities, an agent has a better opportunity of suggesting a mode of Assurance suited to a particular condition, and consequently more likely to be appreciated by the person to whom it is suggested.

It is also desirable, and indeed necessary, for an agent to be well acquainted with such particulars as the following:—If his Office charges *high rates of premiums*, he should be able to explain the advantages given in return, or he will stand a chance of being confounded by some such answer as the following, from persons to whom he may have suggested an Assurance:—"I shall be very happy to assure my life with you, but I find I can do it for 10*s*. a year less in such an office, and in these times we must save all we can," &c. Now it is very possible that if the agent be properly acquainted with the advantages derivable from his own Office, he may be able to convince his friend that he will *not* lose anything by assuring with him, and perhaps even be eventually a gainer.

Again, the agent to an Office which charges *low rates of premium*, and consequently makes little or no return of profits, will of course find that the first and most important point is, to be able to show his friends that they will be perfectly secure in choosing his Office.

The simple fact of an Agent being evidently well acquainted with the business of Assurance, is in itself a great way towards giving other persons confidence in the Company he represents. In comparing the charges made by a Company with the rates of other Companies, it is not sufficient to take any one particular age for the purpose, as it sometimes happens that a Company whose rates for young lives appear high, may take the older lives at a lower rate than an Office whose rates have the reputation of being much lower. In the present age of competition it is very necessary to consider these things, in order that no advantages may be lost sight of that may assist in obtaining policies.

If, in the publication of this little work we shall have succeeded in persuading the provincial agents to take a warmer interest in the subject of Life Assurance, and to give it the attention it so well merits, we believe much will have been done towards increasing the number of assurers, and the value of the agencies, to which we most devoutly say, Amen.

The field from which a harvest may be reaped is before us; *but before reaping, comes sowing.* The public mind must be informed as to the advantages of Life Assurance before Assurances can be obtained, and *they are obtained in proportion as that information is extended.* Now, if the agent will make known the benefits of Assurance within the circle of his own friends, acquaintances, and connections, he may fairly expect to get out of that sphere some business. Patience and perseverance are ordinarily well rewarded.

A shrewd agent watches for good opportunities, and they are by no means few. He also watches against unfavorable circumstances, for they are numerous also. He does not urge his friends to *assure;* that might be deemed an unbecoming interference; but he shows in clear and forcible language the advantages of the system. *He does not lecture them on their duty to assure; but he leads them gradually to see that it is their duty.*

Many favorable opportunities for getting business will occur in the course of an agent's practice. They will not be all in one class of circumstances, but will present themselves in varied forms.

Having obtained a proposal [a successful agent known to the writer] addresses the usual enquiries to the referees, and, where it is possible, conveys the letters himself. This gives him an opportunity to speak on the subject of Assurance to the parties referred to, who may be entire strangers to him, and not otherwise accessible, and being a chatty, lively man, he soon makes himself agreeable, and the result, in more than one instance, has been that he has obtained an Assurance from one or both of the persons referred to in the original proposal. This success has partly arisen from his own suggestion, but perhaps mainly from the circumstance, that persons are willing to follow the steps of a friend in a course which they believe to be advantageous, although they may not have sufficient boldness to lead the way; another principle in man which may often prove serviceable to an agent.

Why are fewer Life Assurances effected in proportion in *small* than in *large* towns? The answer frequently given to this inquiry is, "That the inhabitants of large towns are usually better informed than those of small towns, and therefore better able to appreciate the advantages of Life Assurance." We repeat, that we consider this an unsatisfactory reply.

We think we can trace the cause: Upon calling to mind the nature of the Life Assurance business done in the larger towns within our own observation, it almost always appears that the greatest portion of the business is in the hands of two or three working agents, men who understand and appreciate the subject, and who have each used a large amount of diligence, perseverance, and discrimination, in establishing their business; and no doubt have afterwards become too much alive to the value of it, when once established, to allow it to diminish.

We could also illustrate our view on the subject, by naming several important towns in which scarcely any Life business had been effected until an agency was taken by such a person as we have described, when the value of the principle having been made a subject of conversation, and in various ways brought prominently before those likely to avail themselves of it, more business has been done in *one year than had been effected in the previous ten.*

In the same way in the small towns, where occasionally we find an agent or two of this stamp, the inhabitants are invariably as well informed upon the subject, and as ready to apply its advantages to themselves, as those of the largest towns.

We would invite the agents in all *small towns* to consider this matter, and if their neighbours *are* more alive to the advantages of Assurance than usual, to think whether it has not been caused in the way we suggest; and if, on the contrary, the work has yet to be done, *to remember that there is scope for exertion in the smallest town, and that without much trouble, the importance of Life Assurance, and the advantages that any particular Society may possess, can be brought under the notice of almost every person.*

It is to be feared that an idea sometimes prevails, *that where little has been done, but little is likely to be done; but experience has shown such reasoning to be erroneous.* Indeed, to prove this, it would only be necessary to understand the circumstances of individuals, when it would be found that the majority of those who have never given a serious thought to Life Assurance, are persons to whom its effects would be most beneficial.

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[POSTSCRIPT TO THE FIRST EDITION.]

The following notice appeared on the wrapper of the First of the Three Parts of this work :—

"Having consented to the publishing of the INSURANCE GUIDE AND HAND BOOK at the POST MAGAZINE Office, and having undertaken to see its pages through the press, it may be desirable to state that I have done so, under a condition with the author, that the work shall not contain any passage indicative of praise or censure of particular Offices. I cannot undertake to be responsible, on such matters, for any opinions but my own; and in a work professing to be a Hand Book for the use of Agents it was not to be expected that the commendation of other Institutions would be agreeable to the representatives of those that were either censured or neglected.—J. HOOPER HARTNOLL."

The entire work is now before the public; and I think it will be admitted that the compact between the author and myself has been fairly carried out. With the exception of occasional references to Companies and schemes that have ceased to exist, the INSURANCE GUIDE AND HAND BOOK is so free from praise or censure of particular Offices, that it must be apparent that its talented and industrious author has had but one object in view, as set forth in the title-page, namely, the production of a work "dedicated especially to Insurance Agents," that shall be regarded by them as "a Guide to the principles and practice of Life Assurance" and "a Hand Book to the best Authorities on the Science."

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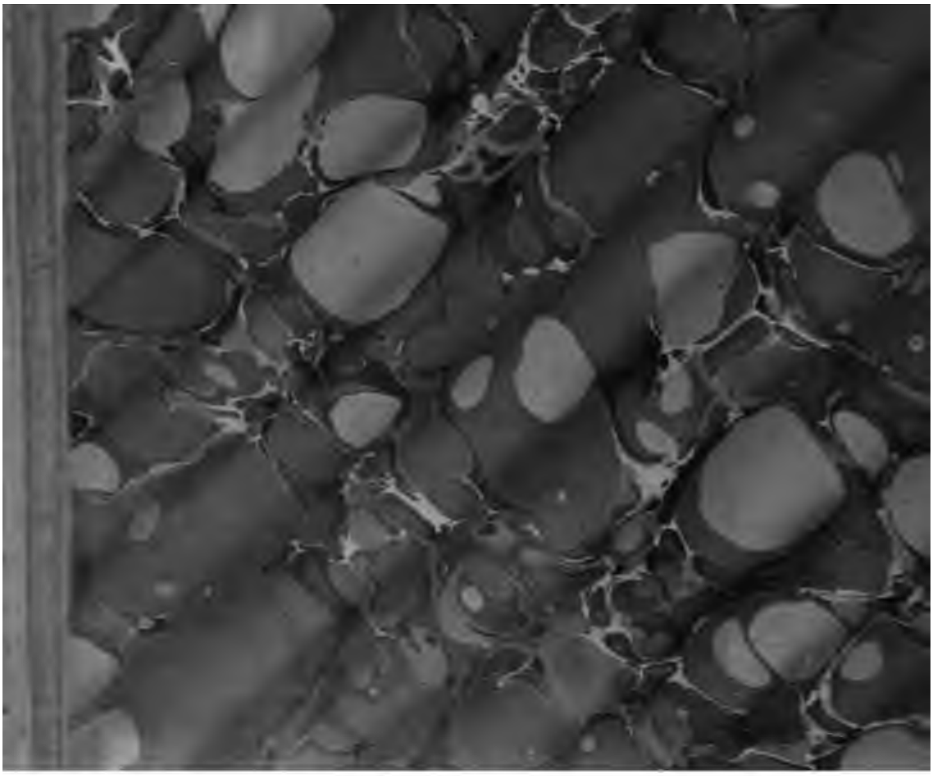

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